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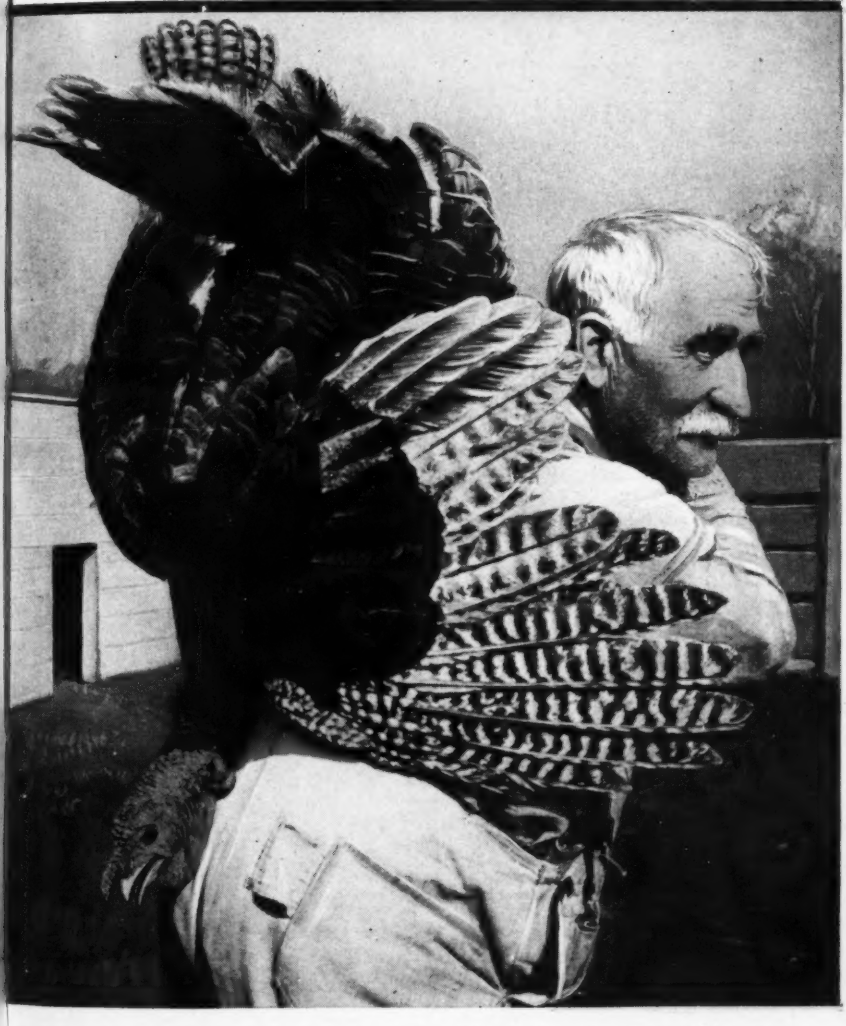

Read: Chips—For Peat's Sake Use Potash—Specifically Specified Farming—Dictating Prices—South Dakota

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Better Crops

The Pocket Book of Agriculture

The Whole Truth—Not Selected Truth

VOLUME VII NUMBER THREE

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Let us give thanks for a bountiful harvest

PUBLISHED MONTHLY BY THE BETTER CROPS PUBLISHING CORPORATION, A SUBSIDIARY OF THE POTASH IMPORTING CORPORATION OF AMERICA, 10 BRIDGE STREET, NEW YORK. SUBSCRIPTION, $1.00 PER YEAR; 10c PER COPY. COPYRIGHT, 1926, BY THE BETTER CROPS PUBLISHING CORPORATION, NEW YORK.

VOL. VII NEW YORK, NOVEMBER, 1926 No. 3

¶ *Jeff believes that big men carry no—*

Chips

By

Jeff McDermid

MY WORK for many years has brought me in contact with what the world calls "big men"—men who have done things; captains of industry who are accomplishing the seemingly impossible.

Always, on meeting for the first time one of these "big names" about whom I have heard a great deal, I am struck once again with these points: the big man invites criticism, asks questions, seeks advice; he is modest, quiet, plain as an old shoe; he lets you do the talking—is a good listener; he is never resentful or thin-skinned.

Whether these powerful souls became great because of these qualities or achieved them after success crowned their efforts, I do not know positively, but I am inclined to suspect that without these attributes they would have remained clerks.

I say this because, first, it has been my observation that men do not easily change their fundamental characteristics—when I meet them at sixty-three I find outstanding traits that those who have known them from childhood assure me have always been there; and, second, because little men, clerks and has-beens, do *not* possess these virtues.

BIG MEN are much easier to meet than little men; it is only the pea-sized brain that must surround itself with buffers and sends out word that he is "too busy—come around next month!"

On the same general principle that "if you want a thing done take it to a busy man, as the other kind will never have time to accommodate you," to be courteously received go to the desk of the man who is planning a giant merger of railroads—the peewit clerk in his outer office, all swelled up like a poisoned pup will insult you and take pains to prove to you how big he is; but the big man, once you are inside his office, is kind, courteous, receptive and seemingly has ample time for everything.

But any experienced reporter, correspondent or writer will tell you that although big men are easy to see they are difficult to interview. This is because of their innate modesty—their reluctance to talk about themselves. Most of them are blessed with a large sense of humor, do not take themselves too seriously and prefer to listen.

I remember once upon a day I visited the President of a great corporation; he was the man who started the business twenty years before on a meagre capital, and who was now in addition to being a power in his own industry a director in over thirty other great enterprises in six different fields.

I met this man at dinner at his country home, and over the coffee and cigars in his great library I started to ask him questions about the early days of his career. "Oh," he laughed, "there's nothing there for you. I was poor, worked hard, had some luck—and here I am; that's all. Now, what I should like is to get your opinion of our latest merchandising policy—" and he proceeded to outline it briefly, asking me anxiously what I thought of it.

I gave him my opinion, then tried again to get him started into a reminiscent mood so that I might learn some of the intimate facts about his life. But each time I tried this tack he volleyed back with a question.

Eventually, much to my annoyance and disgust, I found myself unconsciously telling him some of my own experiences in various ventures, while he sat forward in his chair, intently listening—the interviewed doing the interviewing.

The truth is that these big fellows do not see themselves as we see them; that is, they do not constantly picture themselves as big men. Rather, so absorbed are they in their work, in solving their own problems and in getting every opinion of outsiders their contacts accord them that they haven't time to form very clear pictures of themselves in relation to their background.

A GREAT financier, who had retained me some years ago to do some work for him, made a quaint statement to me that I have never forgotten. He said: "All that I have ever learned came in through my eyes and ears; I never learned anything through my mouth! So then with other men I have come to keep my mouth closed as much as the situation will permit, and to keep my eyes and ears open."

This man, too, was quiet, modest, simple—not at all what the people who knew him only through newspaper pictures might picture him to be.

At another time I happened to

(*Turn to page* 61)

Nine-foot corn was produced on this Waukesha county, Wisconsin, field after 150 pounds of muriate of potash to the acre had been applied. The untreated crop was too poor to harvest

For Peat's Sake Use Potash

By G. E. Langdon

Wisconsin College of Agriculture

FROM "cat-tails to corn" is only a short step for the farmer who knows how to manage his marsh land properly. When well drained, fertilized, and managed the so-called "wet land" becomes a source of profit instead of annoyance.

The choice of a proper fertilizer depends, of course, upon the nature of the soil. Experts in the soils department of the Wisconsin College of Agriculture classify marsh land as peat, muck, and "marsh border." In a study made here it was found that the nitrogen content (pounds) of all marsh soils is very high compared with upland soils. Peats are exceptionally rich in nitrogen because they are composed almost entirely of organic matter.

Peat soils, as a rule, are very low in mineral elements, potassium and phosphorus. Mucks are better supplied with these two elements, though the potassium content is low in comparison with upland clay or silt loam. The "marsh border" soils are well supplied with both potassium and phosphorus as well as nitrogen, and therefore

have high cropping possibilities.

"Since peats and mucks are low in the element potassium, crops growing on these soils are limited in yield or fail entirely unless this element be supplied in the form of potash fertilizers and manure," declares A. R. Whitson of the soils department.

"It is a striking fact that the lighter peat soils contain, on an average, only about 1/28 of the amount of potassium contained in a clay or silt loam. Muck soils, having more earthy matter, have 1/12 to 1/6 as much. Some light peats, contain only about 1/150 as much of this plant food element as is contained in a good silt loam. In the case of peat soils the total amount of potassium actually present would often suffice for only a few crops, even if every particle of it were available, which is never the case.

"THERE are several kinds of potash fertilizers. Some of these are valuable for their potash only, while others also contain phosphorus, and, often, nitrogen. Fertilizers containing two or all three of the elements, nitrogen, phosphorus, and potassium, are called mixed or commercial fertilizers. Those containing potash only, such as the muriate and sulphate of potash and kainit are almost entirely imported. On marsh soils needing only potash, they are of course, the cheapest and best fertilizers to use. High grade muriate and sulphate of potash contain nearly 50 per cent potash, and kainit contains from 12 to 14 per cent.

"On marsh soils needing both phosphorus and potassium, mixed fertilizers are very satisfactory though more expensive than an equivalent mixture of a high grade potash fertilizer and acid phosphate. The percentage of potassium in the fertilizer must be considered in determining the amount to apply. There is as much potassium in 100 pounds of high grade muriate of potash as in 1,000 pounds of a mixed fertilizer containing but 5 per cent of potash.

"On many peats and mucks, particularly those of southern and southeastern Wisconsin, potash fertilizers alone give excellent results, especially during the first few years of cropping. But in many cases the addition of phos-

The magical transformation of this marsh from cat-tails

phates in greater or less amounts, depending on conditions, is necessary for the most profitable yields. On all acid marshes both kinds of fertilizers should be used."

The amount of potash to use depends largely upon the crops to be grown, according to Mr. Whitson. He points out that such rank growing crops as beets and cabbage should have a heavier application than the cereals and hay grasses. When these crops are grown in rotation it may be unnecessary to use the potash fertilizer in seeding down with a cereal, following a crop on which a heavy application was used the previous year.

"On marshes underlain with clay and where the overlying peat or muck is from 12 to 15 inches in depth, it frequently happens that there is a marked need of potash fertilizer or barnyard manure for a few years after it is first drained. After that time this need partly, or entirely disappears. This is probably due to the fact that the settling of the peat or muck in draining and working permits the subsoil, which contains much larger quantities of potassium, to work up in the soil.

"A marked illustration of this occurred on the Experiment Farm at Madison. A number of years ago a tract of marsh land was tile-drained and for the first few years showed a very great deficiency of available potassium. Fertilizers containing this element would increase the yield three and sometimes fourfold. During the past few years, however, this marked need of potassium fertilizers has largely disappeared. A part of the necessary potassium has become available from the subsoil while a need of phosphorus and nitrogen has gradually developed, so that a complete fertilizer, such as barnyard manure, is now the most helpful. It should be understood, however, that this condition can only develop on peat and muck soils that are comparatively shallow and underlain with clay."

HOW to apply fertilizers is a question that confronts the owner of marsh land. The soils department recommends the following.

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to corn followed drainage and the use of proper fertilizer

This tree, planted in 1923, bore some fruit in 1925

TUNG-OIL

A New Crop for the South

By J. Francis Cooper

Florida Agricultural Experiment Station

THE Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture has introduced many thousands of new plants into the United States in their efforts to get new profitable plants for American farmers. One of the most interesting of these is the Chinese wood-oil or tung-oil tree. This tree, a native of China which was introduced into the United States in 1905, gives promise of becoming an important farm crop in certain sections of the southern United States, particularly northern Florida, southern Georgia, Alabama, Mississippi, and Louisiana. It was first planted on the farms of the Florida Experiment Station at Gainesville in 1912, and out of all the places in which it has been tried, seems to give most encouraging results around Gainesville and in the other sections mentioned above.

That section of central Florida around Gainesville has been badly in need of a staple money crop since the coming of the boll weevil drove out the one on which it formerly depended—Sea Island cotton. Other parts of the Gulf states where the tung-oil tree seems to be adapted have been endeavoring to find an additional money crop to supplement cotton. Thus it is that the tung-oil tree seems destined to fill a long-felt want in the agriculture of these

areas.

However, the farmers and others interested in agricultural development are no more anxious to see the industry succeed than is the paint and varnish industry, which industry consumes great quantities of tung-oil each year. A profitable market for the product is assured. The only question mark by the side of this industry in the southern states is: Will the trees grow here and produce profitably on a commercial scale? Present indications are very encouraging.

The tung-oil tree is a straggly-growing deciduous tree, the leaves of which are large, dark green, and more or less heart-shaped, often with three lobes. It grows to a circumference of from 10 to 12 inches and a height of from 10 to 30 feet.

The tung-oil tree is propagated by planting the seed. Budding work has also been done with success at the Florida Experiment Station, in an effort to rapidly and accurately propagate certain trees that bear fruits in clusters instead of singly, and as a result bear much more fruit. It may be possible also that strains having a large number of seed in each fruit will be developed and propagated in the course of a few years as further work is done.

Cultural practices adapted to the tung-oil are very similar to those suited to oranges and other citrus. The trees require a non-lime soil and good drainage. Fertilization and cultivation give good returns. The American Tung-Oil Corporation has found it advisable to plant winter cover crops of grain and summer cover crops of a legume in the groves. A very promising summer cover crop has recently been introduced and is called crotalaria.

A cross section of a tung-oil nut

Tung oil fruit resembles an apple in outward appearance, but the interior is divided into sections, each of which contains a seed or "nut." The number of seed in each fruit varies from 5 to 15. Although the seed are not true nuts, they are generally spoken of as nuts.

The fruits generally mature in October and November. Harvesting of tung-oil nuts is probably the simplest of any major farm crop harvested by man. The fruits are allowed to mature and fall to the ground, where they may be gathered at once and stored or may be allowed to lie for weeks and even months and then gathered. After being allowed to lie for several weeks the outer husk is easier to pull off and free the seed.

From the seed is expressed an oil known as tung-oil or wood-oil, and it is this that makes the tree valuable. This tung-oil, which is one of the best drying oils known, is used in large quantities in the manufacture of paints and varnishes. The oil tends to make varnishes waterproof and re-

duces their liability to crack. It is said that waterproof varnishes cannot be made without tung-oil.

Tung-oil is used in America in tremendous quantities, and heretofore the only source of supply has been China. However, the Chinese methods of extraction are crude, producing a low quality oil, and this oil is often adulterated before it is shipped. It is also beset with heavy tax burdens.

These factors combine to make China a rather unsatisfactory source of supply. This has caused American paint and varnish manufacturers to endeavor to establish the industry in this country, where modern machinery can be used for extracting the oil and a high quality product obtained.

In fact, the paint and varnish industry is spending thousands of dollars and taking the lead in developing the industry in northern Florida and other coast sections of the gulf states. The American Tung-Oil Corporation, a Florida company owned largely by men connected with the paint and varnish industry, has a 300-acre planting of tung-oil trees near Gainesville, Fla., that are now two years old. The Alachua Tung-Oil Company, also a Florida company, and headed by a paint and varnish manufacturer, has a 700-acre planting near Gainesville. Other plantings in the vicinity bring the total acreage to about 1,200 acres.

EXPERIMENTAL plantings have been made on the grounds of the Florida Experiment Station at Gainesville, and it is here that some of the best long-time records are available. These records indicate a strong possibility that the tree may be grown in this section with a reasonable amount of success, to say the least. A preliminary report by Dr. Wilmon Newell, director of the Florida Experiment Station, issued in May, 1924, has the following to say in part about the possibilities:

"It is said that trees in China attain a height of from 10 to 30 feet, and the trunks a diameter of from 6 to 10 inches, and that they commence to bear when three to six years old, yielding from 30 to 40 pounds of seed to the tree annually.

"As trees 12 years old, on the Experiment Station grounds at Gainesville, have reached nearly the maximum height just given and have in some instances attained a trunk diameter greater than that given above, it would appear that conditions in the vicinity of Gainesville are at least as favorable to the tree as are those of its native home. This is further borne out by the fact that in 1923 one of the Gainesville trees produced a crop of 63 pounds of seed (husked nuts) and the average production of 10 trees was 18½ pounds."

THE tung-oil tree seems to be able to grow and develop with very little attention, but will repay a little cultural care. The plantings of the American Tung-Oil Corporation and the Alachua Tung-Oil Company are well cultivated, fertilized and cared for each year. As a result many of their trees, which are just two years old, have produced a small crop of nuts, and officials in charge of the work confidently expect them to produce well at three years of age and to reach full production at four years of age.

Julean Arnold, American Commercial Attache at Peking, China, recently made a tour of the tung-

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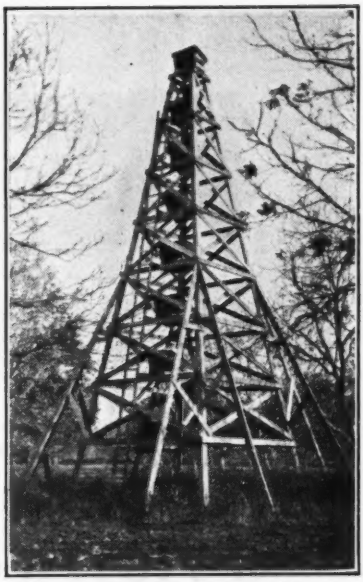
Man-Made Climate *for* Walnuts

By V. V. Hostetler
Covina, California



Tower with thermographs for registering temperatures

THE scientific study of temperature conditions and frost prevention methods which has been made in the last 10 years by the Federal Weather Bureau through its Fruit Frost Service has practically eliminated for the California citrus growers the danger of such a disastrous frost damage as was experienced in 1913.

The Weather Bureau is now turning its attention to the walnut industry, and in sponsoring the research work of the California Walnut Growers' Association, the largest cooperative walnut growing and shipping concern in the world, and of the California Farm Bureau hopes to protect the walnut industry from the Spring "cold snaps" which have frequently done heavy damage to the walnut bloom and the forming nuts.

Under the direction of Floyd Young, meteorologist of the Fruit Frost Service and his assistant, C. I. Dague, who for several years has made valuable weather forecasts for the citrus raisers of Los Angeles county, 26 temperature stations are maintained in the walnut district of the San Gabriel Valley in Los Angeles county.

A part of the equipment for this scientific research is a 40-foot tower built by the California Walnut Growers' Association for the purpose of getting a complete survey of all the temperature conditions to which the walnut tree is subjected. At intervals of every

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U. S. S. H. Howard Teehee Colantha—one of six registered bulls in the Academy herd

The Navy Runs

By Frank George

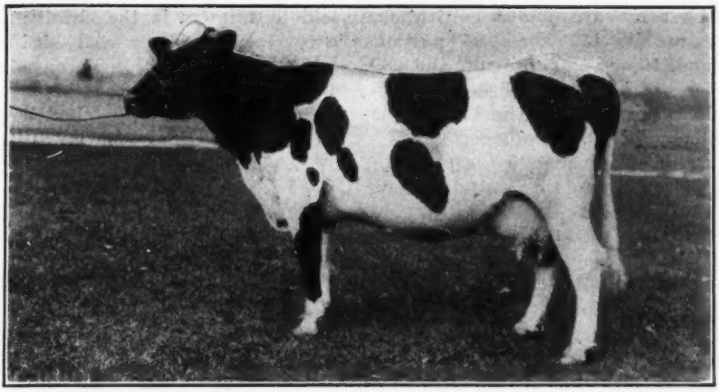
United States Department of Agriculture

NEPTUNE in his watery kingdom is probably amazed at the spectacle of his marine relatives in Uncle Sam's Navy operating a dairy farm. And yet, the versatile tars have demonstrated they can starboard a cow equally as well as they can a helm.

The dairy farm is at Gambrills, Md., a few miles from the Annapolis Naval Academy. It has been adjudged by Department of Agriculture experts a model in dairying efficiency. The farm is a financial success. Many dairy farmers may learn something from its example.

In the fall of 1910, there was an outbreak of typhoid fever at the Naval Academy. The Secretary of the Navy appointed a medical board which, after careful investigation, reported that the infection came through the milk supply. At that time the Academy was using about 150 gallons of milk a day. The supply was irregular and came from scattered dairies. The outbreak of sickness convinced Paymaster Samuel Bryan, who was then midshipmen's storekeeper and commissary officer, that the Academy should operate a modern sanitary dairy of its own.

An expenditure of $25,000 was made, financed by a loan from the Midshipmen's Store, with which to buy 100 cows and to erect up-to-



Meek Piebe Fobes 2nd, with a milk production of 23,860 lbs., is one of the outstanding females

a Dairy Farm

¶ *And runs it exceedingly well*

date cattle barns. feed barn. silos, milk house, and other appurtenances. Within 10 months after work was begun, the cows were chewing their cuds in their new homes and a stream of pure milk was flowing daily to the Midshipmen's "mess." The difficulty then was that the milk was so good that the supply was inadequate to meet the demand, whereupon Congress advanced a loan of $255,000 with which to extend operations.

Several farms, aggregating 864 acres, were purchased, and work begun on new buildings in 1914. They included five 50-cow milking barns of hollow tile construction, plastered inside and stuccoed outside. The barns are thoroughly sanitary, with concrete floors and gutters, numerous windows, and an efficient ventilating system. The cows are well bedded and stand on cork-brick platforms.

The milk house, in front of the row of cow barns, is also of hollow tile, with plastered walls and concrete floors. It contains an office, boiler room, wash room, milk room, refrigerator, sterilizer, and laundry. Equipment consists of a complete refrigerating plant and all modern apparatus essential to the proper handling of milk. Other buildings include a maternity barn, a calf barn, horse barn, bull barn, feed barn, five concrete silos of 180 tons' capacity each, pump house, dairy house, and a men's house.

Of the total area of the farms,

412 acres are under cultivation, there are 159 acres of pasture land, 10 acres of grounds, and 282 acres of woodland. Sufficient crops are raised on the farm to feed the stock and work animals, consisting of approximately 1,600 tons of ensilage, 600 tons alfalfa hay, 5,000 bushels of field corn, and 450 tons of straw for bedding. The crops on different fields are rotated in order to obtain the best production from the land. There are approximately 370 head of cattle including 6 bulls, 173 cows and 191 heifers, all of the Holstein-Friesian breed. Many of the cows produce more than 20,000 pounds of milk a year, and of the 150 cows milked at the time this article is being written, 100 are milked three times daily and 50 twice daily.

All milk produced at the dairy is sold to the Midshipmen's Mess, the dairy being conducted as an entirely separate organization. Daily consumption in the winter reaches about 500 gallons, and consumption during the summer is 200 gallons a day, the regiment of Midshipmen during the summer months being reduced to about 500 men. About 50 per cent of the calves born are male, which are sold to farmers in the vicinity at reasonable prices. All heifer calves are raised for replacements, a complete record being kept on each animal showing breeding, birth, production, disease, and other characteristics.

THE dairy showed a profit from the start. The original loan of $25,000 was repaid the Midshipmen's Store, and of the $255,000 loaned by Congress, $100,000 was repaid two years ago. The balance of $155,000 was wiped off the books by Congress with the stipulation that the entire property of the dairy, land, buildings, material and live stock should be an equity of the United States. The financial profits and the elimination of danger of gastro-intestinal disease at the Academy, show a large return on the investment.

Academy records show that over a three-year period prior to establishing the dairy, there was an average of 13 sick days a year per 100 men (a sick day is 1 Midshipman sick 1 day) on account of gastro-intestinal disorders. Records for the three-year period immediately following installation of

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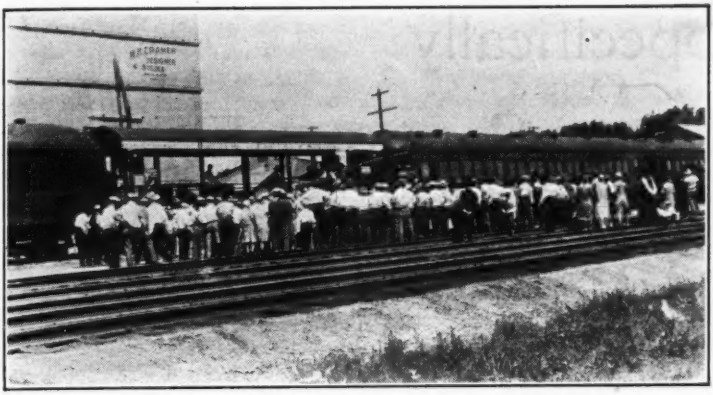
General view of dairy buildings at the Navy farm



One of the crowds which greeted the Special train

A BETTER CROPS SPECIAL

By H. Howard Biggar

Omaha, Nebraska

TRAVELING for two weeks over the Union Pacific lines in Nebraska, and covering 1,800 miles, a Better Crops Special train proved a decided success. Three exhibit cars and a flat car were pressed into service. Programs were held on the flat car, speakers giving talks on such subjects as noxious weeds and how to combat them, smut in wheat, hardy alfalfa and the value of improved crop varities.

Stops were made at 43 towns and after each program from the flat car, those present were invited to go through the exhibit cars where the various exhibits were explained. At the same time a smut demonstration showing the use of copper carbonate was given on the flat car by D. L. Gross, Extension Agronomist of the University of Nebraska. A total of 23,000 persons by actual count went through the exhibit cars.

This train represented cooperation between the Union Pacific Railway, the Nebraska Crop Growers' Association, the College of Agriculture, and the Nebraska Wheat Improvement Association. The train on its trip through the state went into the irrigated section where alfalfa and sugar beets are the main crops, the general farming sections, and the great wheat district of western Nebraska. The subject of wheat smut was probably of most interest, because of the fact that in recent years, smut infection has been very prevalent. Elevator men in the wheat section of the state reported that as high as 90 per cent of the wheat coming in the past fall, was infected with smut and the average cut in price ranged from 5 to 8 cents per bushel.

Great interest was shown by the farmers along the route of the Special and it is thought that the message of this train will prove very effective.

Specifically Specified Farming

By G. E. Ferris

Manhattan, Kansas

Albert Weaver is a successful farmer. Why? Because he is a man of vision. Instead of spending his time talking about the hard row that the farmer has to hoe, he is busy on planning to put more acres of dry land under profitable production. Because of his attitude toward the farm situation and his success in making money in the face of it, he is receiving nation-wide attention. He believes in better crops.—The Editor.

DID you ever, when 10 years old, entertain the idea that you would like to operate a farm a mile or two or even four miles square? If so, you had the same desire as Albert Weaver of Bird City, Kansas, who is now 61. And his dream has come true.

The only child of an eastern Nebraska farmer, Albert always maintained that when of age he wanted to go to western Kansas and homestead a quarter section of land. Mr. Weaver still owns the quarter upon which he staked out his claim near Oakley, Kansas.

Today Weaver owns 35 quarter sections of land. He farms and directs the farming of these as well as 70 more quarters belonging to non-resident landowners who bought this land between 1906 and 1912. This is mostly unimproved land but Mr. Weaver maintains, "I am not justified in renting out two well improved farmsteads and keeping the buildings up. The income on the improved land, above that on the unimproved land, is not sufficient to meet the expense of keeping up the improvements."

Mr. Weaver contracts the farming of the 70 quarter sections belonging to the non-resident landowners as well as most of his own 35 quarters.

When non-resident landowners year after year are willing to leave the supervision of the farming of their numerous quarter sections to the ability of one man, there are without doubt certain practices and farming methods which contribute to the success of these farms. These practices and farming methods are clearly outlined by Weaver to each of his tenants in his farm leases.

In addition these contracts specify: "The work of summer tilling and seeding of the land to wheat, seasons of 1927 and 1928, to be subject to the direction of Albert

Weaver and he reserves the authority and right for the party of the first part to take over the above land if the work is not done when it ought to be done according to his judgment or is unsatisfactory to him, any time before wheat is seeded by paying the second party the customary price for the work already done by him on the land and this lease to stand cancelled and the first party to have full right and possession of the specified premises.

"One-fourth rent of all crops on the specified land during the term of this lease delivered free of expense to Albert Weaver, Bird City, Kansas, immediately on being threshed and division as to rents to be made as threshed."

The work on the land which is not leased, Mr. Weaver has done on an acre cost basis, the help furnishing all necessary farm machinery and equipment. He pays $2.50 an acre for plowing, 80 cents an acre for double disking, $2 an acre for harvesting wheat with a combine, $1.35 per acre for binding when the employee furnishes the twine, 50 cents an acre for shocking, 12 cents per bushel when the thresher hauls in the shocked bundles delivering the wheat to the truck at the machine, and eight cents a bushel for threshing when his own teams are used.

This veteran farmer of western Kansas reports, "The returns on the non-resident land, if the entire quarter is farmed, usually run from $300 up to as high as $1,000. This varies with the crop season and the price received for the crop. In 1924 I paid a non-resident land owner one-fourth rent that amounted to $2,900 from a single quarter. The yield was 6,452 bushels of Kanred wheat."

THE non-resident land owner gets one-fourth of the crop grown on his land free of any expense to himself, except for a 10 per cent deduction made by Mr. Weaver for supervising the work. If the land is well located and within eight miles of town he gets one-third rent. The tenant furnishes the seed as well as the equipment and he does all the work including the delivery of the grain.

One-third of the land is under summer fallow all of the time. The ground is plowed seven inches deep every four years. Kanred wheat

Mr. Weaver (left) superintends the sacking of potatoes

is seeded in the stubble the next two years after the seedbed is plowed and the third crop year the ground is disked before seeding. Only certified seed which has been treated with formaldehyde or copper carbonate dust for smut is used for seeding. This plan has been used for 18 years and wheat smut has never been noticed.

Mr. Weaver has stored as much as 70,000 bushels of wheat on the ground in the summer waiting for available shipping cars. He has invented a machine that scoops up the wheat from the ground into the wagon or into the railway car at the rate of 25 bushels per minute. This machine is mounted on a Fordson tractor so that it is movable from place to place.

"I find," suggests Kansas' gigantic wheat grower, "that wheat gives a better cash return per acre than corn, and besides I find it difficult to grow corn and wheat the same seasons. The wheat yield for me on the summer fallowed land is generally in excess of the corn and the price usually is double that of corn. Corn grown here usually is third to fourth grade and of poor quality while wheat is the best that is grown in Kansas, commanding the highest price on the market."

MR. WEAVER grows from 80 to 160 acres of potatoes each year. "Moisture is needed to grow potatoes. The big secret of success in growing potatoes in western Kansas is the storing of moisture by summer fallowing. I like to have five feet of subsoil moisture stored before planting potatoes," he says.

"I started with 10 acres of potatoes in 1912," states Mr. Weaver. "Growing mostly Early Ohio potatoes the yields have run from 80 to 150 bushels per acre in the following years until last year this variety was the heaviest yielder. Since starting to grow potatoes I have increased their acreage until during the last three years I have grown 110, 115, and 125 acres respectively."

Experience has taught Mr. Weaver that it pays to plant only certified seed which has been treated for potato rot and scab. Previous to this spring, when he used a hot formaldehyde treatment, he has always treated his potato seed with corrosive sublimate.

"THIS spring I planted 100 acres to potatoes—50 acres of Cobblers, 20 of Early Ohios, 25 of Triumphs, and 5 acres of McClures," this outstanding farmer relates. "Each year I try out a number of new varieties. I increased my acreage of Triumphs and McClures because these new varieties have done well. Under western Kansas conditions the varieties of potatoes range in size from largest to smallest as follows Irish Cobbler, Early Ohio, McClure, and Triumph. I find that because of their increased popularity with the public and because of their high yielding qualities, that the Irish Cobbler potatoes are the best potatoes that I can grow.

"I don't believe that there is any particular advantage to planting potatoes at just the right time of the moon or on St. Patrick's day," remarked Mr. Weaver. "I have had my best success with potatoes when I planted them from the middle to the latter part of April. I like to plant them so they will come up just after all danger of frost."

There have been a number of

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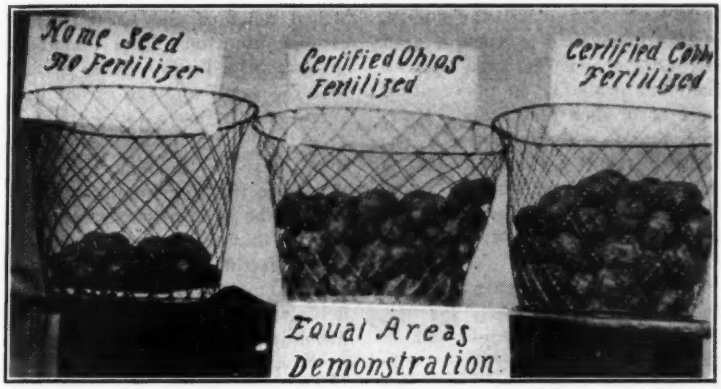

Improved seed increased the yield per acre 53 bushels. Fertilizer resulted in a 46 bushels increase

Peel Fewer Potatoes

By L. F. Wainscott

County Agent, Kingston, Missouri

CALDWELL county, Missouri, used 1,000 tons of limestone and 17 cars of phosphate in 1925 in its start on a campaign for Better Crops. Potash was not used in large amounts because at present most Caldwell county soils are fairly well supplied with potash. Nitrogen, while lacking, is to be supplied in this program of soil improvement by the growth of legumes and return of crop residues.

The above is not a record of achievement compared with many Missouri counties where soils are lower in plant food and the use of fertilizer is a common practice but it is outstanding in northwest Missouri, where soils are generally thought to be among the most fertile, and the adding of plant food the exception rather than the rule.

The whole thing started when a vexed farm woman threw down her paring knife, picked up the 'phone and said to the county agent, "I am tired of peeling little potaties. We want you to show the men in this community how to grow real potatoes." In response a "Peel Fewer Small Potatoes" campaign was staged. Northern-grown certified seed and phosphate demonstrations were run, the average of 10 carefully weighed and measured in 1924 showing 56 bushels increase per acre for the seed and 43 bushels per acre for the phosphate applied 400 pounds per acre. That year three cars of phos-

phate were shipped into the county. In 1924 more than 500 people used northern grown certified potato seed and probably 50 per cent of these used some phosphate. However, that is a story in itself. The indirect result of which was a home project resulting in many folks, seeing, feeling, weighing, and eating what plants will do when they are fed.

Demonstrations, located on the public road and properly marked, showed that alfalfa could not be profitably raised on most soils without lime and phosphate. One demonstration field of this kind returned its owner R. H. McCollough, $100 per acre gross in a single season, while fields on adjoining farms without lime and phosphate failed.

Tests showed sour soil and rock rich in lime on the same farm, in many cases miles from the railroad. To solve this problem five local pulverizers were installed, two of which went from farm to farm, pulverizing rock at a cost of from $1.25 to $2.00 per ton depending on quarry and management. These machines have furnished most of the 1,000 tons of ground limestone used and have encouraged a large number of men to try a small tonnage rather than a few men to use a large tonnage. That the "Little Rock Eaters" will some day be as common as a threshing rig is evident, and they will not be so despised because not limited to rush season operations.

The feeding ideas were carried from the potato patch to other fields where they gave equally profitable returns. Wheat demonstrations showed 5-bushel increases. When 150 pounds of phosphate were applied on corn the results varied with the method and amount of application. T. S. Virtue used 60 pounds per acre on 140 acres of corn except 10 rows across an eighty. This was dropped in the hill at a cost of 65c per acre. Weights show an increased yield of 7½ bushels per acre on the fertilized corn over the 10 rows not fertilized. The date of maturity was advanced 15 days and the quality was improved.

Farmers are fast realizing that plants must be fed a balanced ration the same as livestock.

The fertilized corn at right made 7½ bushels per A. more at a cost of 65 cents per A.

¶ No. 8 and the last of Professor White's series

Kentucky Blue Grass

By J. W. White

Soil Research Chemist, Pennsylvania State College

A STUDY of the most economical means of rebuilding our acres of depleted farm land throughout the eastern states is one of the most vital problems that today confronts the agricultural experiment stations. The time will come when these idle acres of tillable land must be made to produce maximum crops if we are to sustain our fast growing population.

THE late Cyril G. Hopkins has truthfully said: "If the art of agriculture has ruined the land, the science of agriculture must restore it, and the restoration must begin while some farmers are still prosperous, for poverty-stricken people are at once helpless and soon ignorant. Outside help will always be required to redeem impoverished soils, for poverty makes no investment, and some initial investment is always required for soil improvement."

The farmer is dependent upon the science of agriculture as a guide to the solution of his problems. It is science that is teaching him to use the land and not abuse it. It was the lack of science that led to the spoliation system of agriculture.

To correct the evils of the latter system art and science must go hand in hand. The restoration of the millions of acres of farm land must be the result of theory and practice.

The most feasible means of studying this problem is through the medium of carefully conducted field plot experiments in which the effects of the treatments are measured both in terms of crop yields and residual effects upon the soil.

AFTER eight years of cropping, the soils of several differently treated plots on the blue grass pasture, and those in crop rotation at Snow Shoe, were sampled to the depth of seven inches. Total nitrogen and organic carbon were determined on the soils, and also on solids taken from the same areas at the beginning of the experiment. The data secured as the result of these studies are shown in table 1.

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Railroad Help

By *Paul Tabor*

Agronomist, Georgia State College of Agriculture

¶One extension man commending another.

DOWN in Georgia more than a dozen railroad agriculturists are helping the county agents and specialists develop the farming resources of the state.

They are a fine lot of fellows, ready to help any worthy cause in the territory served by their company. They are so closely identified with the extension work, that assistance from them is expected regularly in carrying out the various projects. Their work has developed so it supplements that of the regular specialist or county agent instead of competing. Such cooperation is one of the reasons why a lot of difficult plans are put over without as much work as one would usually expect.

IT is the writer's belief that more and more, the full cooperation of outside interests will be sought in promoting progressive extension projects. It is hoped the experience with the railroad agriculturists in Georgia will help in some other state.

The most successful plan of railroad help has been developed by the Agricultural Department of the Central of Georgia Railroad and adopted by several other railroads. The plan is to promote demonstrations of some rather difficult project under the direction of the State College of Agriculture.

One of the first things tackled by the General Agricultural Agent of the Central Railroad more than ten years ago, was demonstrating the advisability of diversification. This was back when there were no boll weevils and all the farmers of Georgia were strong for all the cotton that could be cultivated. The College of Agriculture couldn't get as satisfactory demonstrations as they wished because diversified farming was believed to be risky. The railroad people solved this part of the problem by guaranteeing every cooperator against loss. When this was done a series of demonstrations were started, farm records were kept, and the results published. When the boll weevil entered the state it was not so difficult to change from all cotton to a more diversified plan.

As the diversified demonstrations, popularly called test farms, were concluded a wave of enthusiasm spread over the state for cattle raising. The extension people could not go into other states and buy the cattle desired by the farmers. The railroad agriculturists were not subject to such restric-

tions so spent much of their time for two years in selecting, buying and shipping purebred cattle into Georgia and Alabama. In this work they were cooperating with the Animal Husbandry Division of the State Colleges. Later events have shown this movement to have been premature, because of scarcity of feed in the states. As the need for greater amounts of suitable feedstuffs became evident the railroad agriculturists took the matter up with the colleges and were working out plans for meeting the situation, but were stopped by the entry of the United States into the recent war. After the war the plans for the promotion of more feedstuffs on the farms were revived. The most practical development seemed to be more permanent pasture on the rich moist lowlands. The outlook was for a steady slow growth of this scheme but with railroad help it was greatly speeded up.

TEST pasture demonstrations with one good farmer in each county served by the railroad were planned. To get these out immediately, the Agricultural Department of the Central of Georgia Railway offered to pay half the expense of establishing such a test pasture if it was done under the supervision of their agriculturists who were following a pasture building scheme recently worked out by the Georgia State College of Agriculture. It was agreed that the railroad would not be called on to pay more than $100 to any single cooperator. This financial appeal caused the applications to come in and a splendid lot of demonstrations of improved pastures were started in sections that did not have good pastures, previously. From these demonstrations there was a rapid spreading of good pastures. Meetings were held at each one during the summer and the farmers shown what was being accomplished. Records of the amount of grazing were kept and reports published each year in bulletin form and widely distributed among the farmers of the state. The pastures have been so good that Mr. Jackson, the General Agricultural Agent of the Central has challenged any section of the United States to show better.

As the permanent pasture project was being carried on, the

(*Turn to page* 50)

One of the "test pastures" started by railroad help

Smash Potato Records

From the Official Record

¶ *This crop was grown with one ton per A. of 0-23-24 fertilizer. The potash was in the form of sulfate*

WHAT is said to be a new world's record acre yield of potatoes—62,289 pounds, or 1,038.3 bushels—was made this season by the Zuckerman brothers, large growers of Stockton, Calif., reports W. Stuart, horticulturist in potato investigations in the Bureau of plant Industry. The best previous acre yield, from an accurately measured acre, was probably that made in 1890 by William Sturgis, a large grower at Buffalo, Wyo., in competition for a cash prize offered by a farm journal.

The highest-yielding acre produced 62,289 pounds, or 1,038.3 bushels. Each of five of the 9-acre plots produced more than 1,000 bushels and the average yield of the 9 acres was 1,001.07 bushels per acre. The relative weights of the No. 1 and No. 2 potatoes as compared with the merchantable stock are not known, but from observation of the crop as harvested the percentage of No. 2 stock was relatively small.

The Zuckerman brothers have a 2,700-acre tract. On it they planted 1,500 acres of potatoes. Of this, they selected 13 2-3 acres as having the best possibilities for making a record-breaking crop. On September 6 an official surveyor, working under the direction of Roscoe Zuckerman, located nine 1-acre plots in this field which were regarded as embracing the best parts of it. The rest of the field was further divided into seven additional plots representing fractional parts of an acre.

Harvesting operations were begun on September 8, under the supervision of James E. Curry, potato specialist of the California State Department of Agriculture, assisted by an associate who kept an accurate sack and weight record of the crop from each plot. Each plot was reharvested to get all the tubers that were buried or overlooked in the first harvesting operation.

The soil on which the crop was grown is known as "tule land," consisting of more or less decomposed peat. The crop was heavily fertilized with a chemical fertilizer

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Modern method of harvesting cranberries used by a New England cooperative company

Dictating Prices

By Arthur P. Chew

United States Department of Agriculture

HOW much damage will be done, before it is dropped, by the idea that cooperative associations can dictate prices. That is the livest question just now among informed cooperative leaders. Nothing puts a worse crimp in agricultural cooperation than over-optimistic notions as to what it can do. In a moment I will give you some facts to back up that statement. But first I want to quote the substance of a discussion I recently heard, because it brought the roots of this question to light in a very impressive way.

"It is true that we haven't done much yet; but wait till we get 80 or 90 per cent of the growers lined up in our organization. Then you will see the profits roll in. What the farmer needs is an organization that will enable him to dictate the prices of his products, instead of having them dictated to him. He is going to get it too. A few failures in the beginning won't discourage him. All this talk about economic law determining prices and profits in industry and agriculture is bunk. Prices and profits are determined by the bargaining power of organizations.

"Why are American workmen in eastern cities getting wages averaging around 125 per cent above the pre-war level? Organization. Why is the price level of factory

goods far above that of farm products? Because industry is organized, while agriculture is not. Industry gets more benefit from the tariff than agriculture does, and various branches of industry enjoy special privileges. Why is industry thus favored? Because it is organized. When agriculture is equally well organized, it will be similarly favored."

THE speaker was a member of the board of directors of a farmers' marketing organization. He was telling a membership meeting why the organization hadn't made a profit. He put it down to not controlling enough of the products it dealt in. "How are you going to fix prices," he demanded, "with from 40 to 50 per cent of the growers refusing to come into the organization. They stay out to take advantage of our work, without sharing its cost and risk. You know what happened last year. As soon as we began to hold stuff back from the market, prices rose. Then the outsiders rushed to sell their supplies and satisfied the demand. We were left holding the sack. But just wait till we get more of the growers to see reason. I figure that with an 80 or 90 per cent line-up of the growers we can set our own prices and hold 'em where we set 'em."

Then an expert in agricultural cooperation, sent by the State college of agriculture, intervened.

"You fellows have got hold of the wrong end of the stick," he said. "You put too much stress on organization, not too little. That surprises you, eh? You had the idea that the object of agricultural cooperation is to create monopolies of agricultural products, so that prices can be dictated arbitrarily. Well, it isn't. Are you aware that not even the strongest industrial corporations can fix prices independently of supply and demand conditions? They have tried it and failed. That goes for concerns whose power approaches monopoly proportion far more nearly than yours ever can. You talk about the trade unions. Wages can not be dictated by labor monopolies any more than prices can be dictated by commodity monopolies. The oldest and best managed unions found that out long ago.

"Organization in agriculture can do a lot for the farmer. It can promote quality production by means of standardization and grading. It can save on packing, storing and distribution costs. It can help farmers to act intelligently together in regulating their crop and livestock enterprises so as to avoid gluts and shortages. It can even smooth out cycles of high and low prices. But it can not fix prices permanently. That is what your organization has been trying to do, and that is why it is in trouble.

"YOU have sought to control prices, instead of developing efficient merchandizing methods. You have been careless about sizing, grading, packing and storing. You have neglected to consult and cater to the requirements of your customers. This has been all due to your obstinate notion that the first business of cooperation is to fix prices. And how have you tried to fix prices? In the worst possible manner. You have held back supplies in times of rising prices, with the idea of forcing them still higher. On the other hand, in times of falling prices you have tried to force sales. First you restricted and then you crowded consumption, and you did both at the wrong time. When you drop this

sort of business, and get down to the job of doing a merchandising service better than it has been done before, you will find cooperation a good tool."

In this discussion the speakers happened to be dealing with the affairs of a small fruit growers' cooperative association. Their remarks would have been as near expressing prevailing views, had they been made at a gathering, for example, of tobacco growers. Among tobacco farmers, in spite of disastrous recent experiments in price control, the belief persists that organization will eventually enable the farmers to set their own prices on what they grow. This is not the view of their more responsible leaders. It isn't the view of the Federal and State government economists who assist the cooperative associations with advice and information. Yet, as a hangover from the recent promotion stage of agricultural cooperation, it is exerting great influence.

On the tobacco growers its influence has been bad. The Dark Tobacco Growers' Cooperative Association, with more than 70,000 members in western Kentucky, western Tennessee, and southern Indiana, was organized in November, 1922, when the farmers' cooperative movement was in the full tide of promotive activity. There was immense excitement and enthusiasm. It was the idea of the tobacco growers that a 50 or 60 per cent sign-up of producers would give them full power over prices. A membership campaign brought encouraging results and price control was attempted.

The attempt failed. Tobacco is a hard crop to handle because from 25 to 50 per cent of it is normally carry-over. This carry-over must be stored by the growers if they are to exert any influence at all on prices. They

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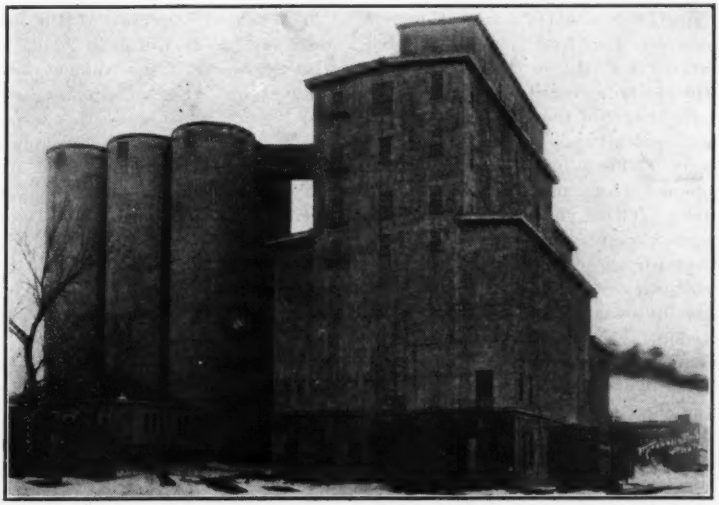

The operators of this elevator at Leavenworth, Kansas, the Kansas Wheat Growers' Association, are in no danger of attempting arbitrary price-fixing because a world crop like wheat cannot be controlled in the markets by action in a single country

South Dakota

By *Charles* D. Byrne

Editor, South Dakota State College

¶ *A clear picture of outstanding development is drawn here for No. 7 of our experiment station series*

ONE OF the richest alfalfa-growing sections in America and ranking near the top in the production of corn, wheat, oats, barley, and other farm products, South Dakota assumed leadership as an agricultural state largely because of early work done by its experiment station in developing drouth-resistant and early-maturing field crops suitable for the great-plains area of this country. The state experiment station was established in 1888 at South Dakota State College, Brookings, immediately following the passage of the Federal Hatch act, which provided for agricultural experiment stations throughout the United States.

THE South Dakota station was one of the first in the United States. Early in the year 1881, the Dakota territorial legislature provided for the establishment of an agricultural college at Brookings. The first building was opened for use in September, 1884. Three years later, the Federal Congress passed the Hatch Act for the establishment of agricultural experiment stations and the following year, under its provisions, the Dakota legislature made what is now the South Dakota experiment station a part of the territory's agricultural college. Three hundred and twenty acres of land adjoining the original college plot of 80 acres were purchased for the use of the experiment station when it was established. The farm now includes 800 acres of South Dakota's best land.

THE first director of the station was Lewis McLouth. He was also president of the college at the same time. Luther Foster, station agriculturist, was the second director, but he held the office only a few months. McLouth took over the direction of the station again until the appointment of James H. Shepard to the position. This was about 1895. Shepard was the station's first chemist. J. W. Heston, president of the college, was acting director of the station in 1901. James W. Wilson, present director, took office the following year. For nearly a quarter of a century, he has served South Dakota in that capacity. He is the son of the famous "Tama Jim" (J. W.) Wilson of Tama county, Iowa, who was secretary of agriculture for 16 years.

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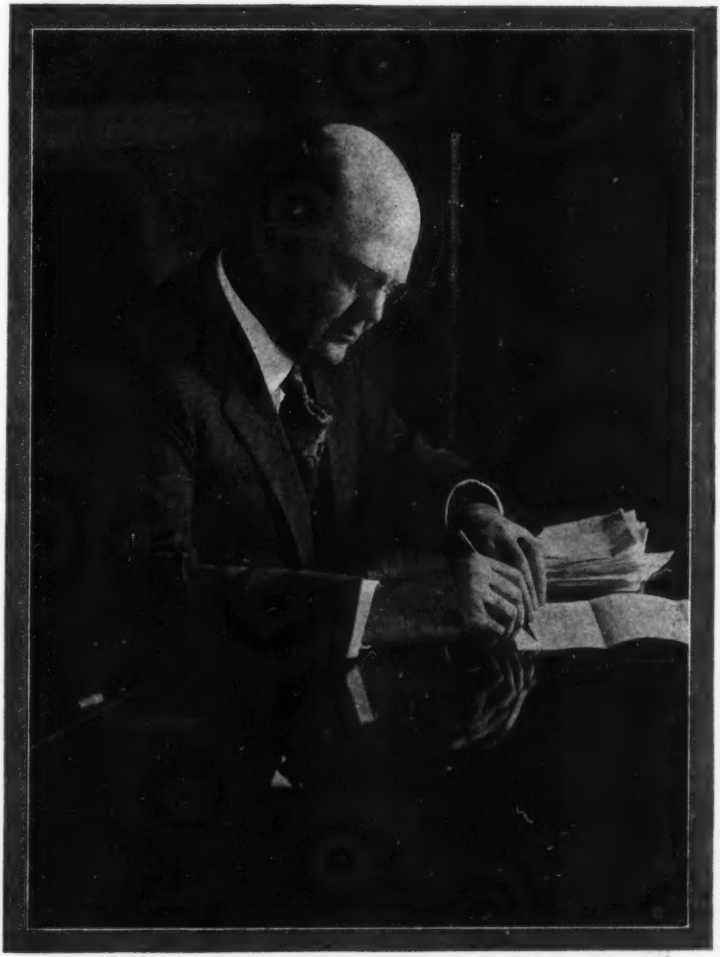
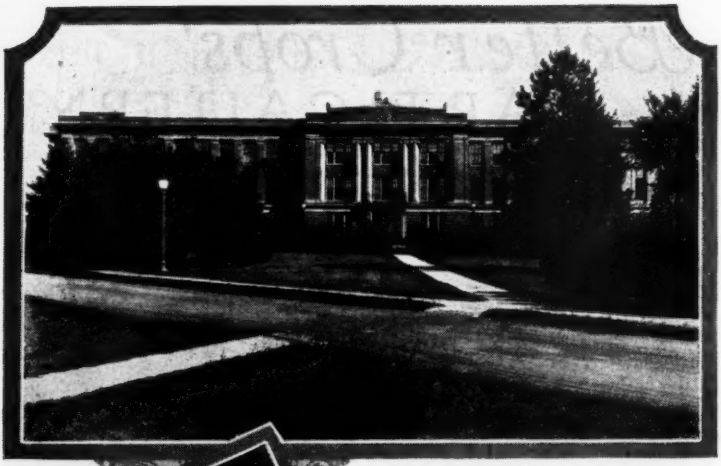
Better Crops' ART GALLERY *of the month*



DR. CHARLES W. PUGSLEY

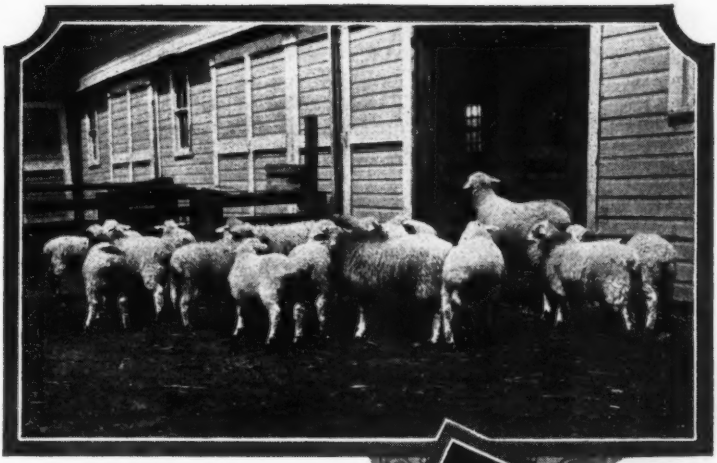
A well known agriculturist, Charles W. Pugsley, former assistant secretary of agriculture at Washington, D. C., directs the experimental, extension, and teaching work at South Dakota State College as president of the institution.



S. D. STATE COLLEGE ADMINISTRATION BUILDING
Practically all of the first floor and parts of the second and third floors of the administration building at South Dakota State College house the administrative offices and laboratories of the South Dakota experiment station.

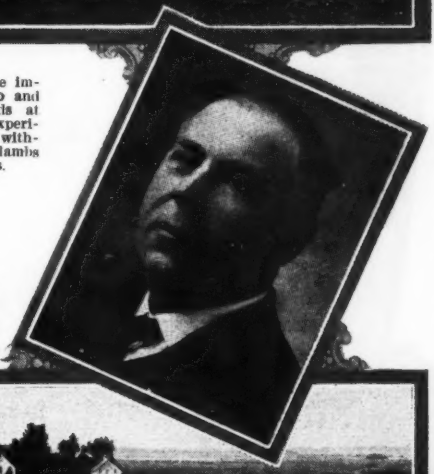
PROF. JAMES W. WILSON
For nearly a quarter of a century, Prof. James W. Wilson has served South Dakota as director of the state agricultural experiment station at South Dakota State College, Brookings.

PRIZE-WINNING DAIRY HERD
The four major breeds of dairy cattle are represented in this dairy herd at the South Dakota State College experiment station.



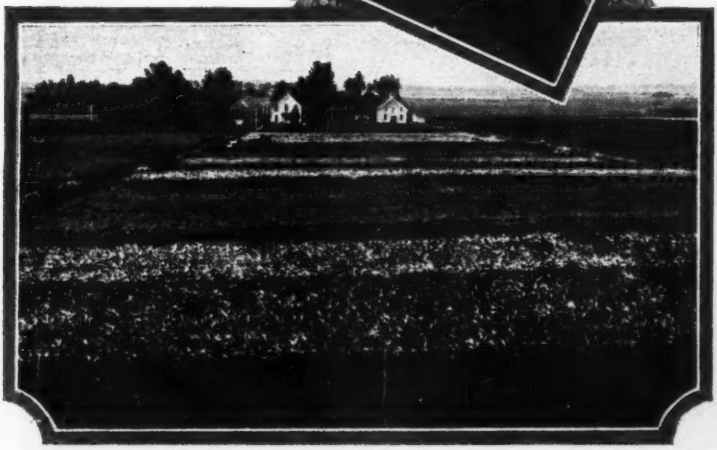
TAILLESS SHEEP

Several tailless fat-rumped sheep were imported from Siberia a few years ago and crossed with improved native breeds at the South Dakota State College experiment station to obtain a new breed without tails. Last year, 18 out of 21 lambs born of the cross were tailless.



DEAN C. LARSEN

As dean of agriculture, C. Larsen has charge of all agricultural work at South Dakota State College, including teaching, experimental work, and extension.



HARVEST TIME ON THE PLOTS

Much of the 800-acre farm at South Dakota State College is given over to agronomy experimental plots.

Part of the great float—the chief feature of the harvest pageant parade at Omaha, Neb., marking the close of the harvest season.

The world's youngest champion cattle judge—Miss Edith Harriot of Heathfield, Sussex, England.

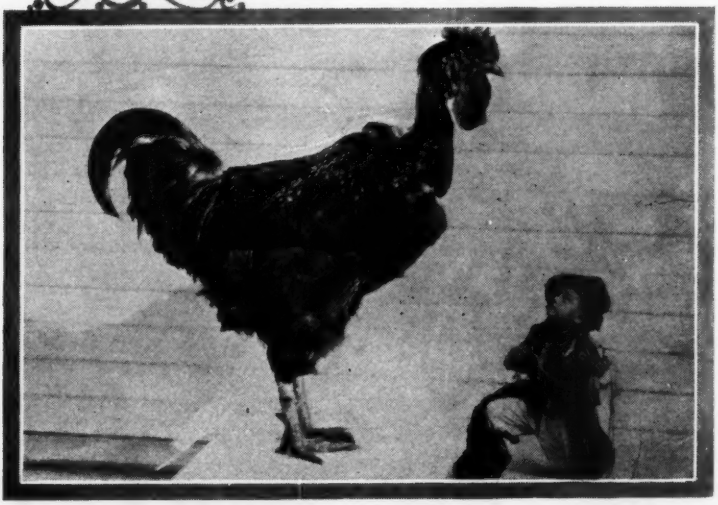
A committee of U. S. and Mexican representatives in conference in Washington, D. C., to adopt uniform regulations for control of live stock diseases.

North Dakota's Champion livestock judging team. Erwin Klusmann, left, won highest individual honors in the U. S. at the National Dairy Show at Detroit this year.

H. R. Tolley, newly appointed head of the Division of Farm Management and Costs, U. S. D. A.

The only woman manager of a hog show—Miss Golda A. Fossett of Peoria, Ill. She is head of the National Swine Show given annually at Peoria.

Uncle John Melton of Carrollton, Mo., evades the high cost of living by making a complete suit of clothes, a hat, and a pair of shoes out of corn husks after two years' labor and at an expense of but 20 cents for thread. The ensemble is made entirely of corn husks dyed blue and red. The buttons are made of corn cobs.



Is this sorry looking fowl ever going to take the place of the proud gobbler as America's Thanksgiving favorite? It is said that the meat of this turken (cross between a turkey and a chicken) is fine eating. This one was raised in California.

The Editors Talk

There is no business other than farming in which so little brains are required for getting a bare living, food enough to eat and shelter for the night. In no business are more brains required to make a real success. And . . . the man without capital, with a strong back, a large family and low standards of living burdens the man of brains and capital and high standards of family life.—Dr. H. J. Waters.

BETTER COTTON

WHAT can BETTER CROPS say for better cotton? With the crisis of a record crop resulting in almost record low prices demanding the attention of every agricultural thinker, what is there in our policies to offer the man concerned? Much! It may be a bitter pill, but sometimes a bitter pill cures a stomach ache faster than the sweet pill.

Cotton for generations has been the better crop of the South, better because for the majority of the planters, it has made greater returns than any other crop they might have used. But when, as this year, many farmers are forced to market at less than cost of production, is cotton a BETTER CROP?

This is the bitter pill. It must force a great reduction in cotton acreage, a turning to diversification, to hard experiences in learning how to produce new crops. It even may force great numbers of planters into bankruptcy, into turning to other occupations. However, any attempt at government encouragement for holding the surplus against the possibility of another great crop next year is obviously only a sweetened pill being passed out by politicians to quiet the headache. It will in no way stop the stomach ache. The surfeit of cotton must be digested.

The law of supply and demand is always to be reckoned with.

Big industries have long since learned how to apply this law to production. Unfortunately, the farmer has ignored its teachings and consequently faced at fairly regular intervals the penalty of this apparent ignorance.

Statistics show us that since the crash in 1921, agriculture has made many adjustments. Except in the case of cotton, almost every other staple crop has made great reduction in acreage.

There are two important factors however which are at work as price stabilizers—one is the increasing tendency toward cooperative marketing, and the other improvement of farm credit facilities.

Agricultural Colleges through their Extension forces have for a number of years worked untiringly for a solution for overproduction. They have advocated crop diversification throughout the country, particularly in the cotton belt.

They have preached more efficient use of the acres cultivated.

Striking results along the latter line are being given out in some figures recently compiled by the United States Department of Agriculture based on the reports of a large number of cotton planters. The idea was to determine the relationship between investment per acre, yield per acre, and net cost per pound of lint.

The results showed that one planter had cultivated his crop at a cost of $24.26 per acre, obtaining a yield of 34 pounds of lint, while another planter, who had expended $46.91 per acre, obtained a yield of 600 pounds of lint cotton, or approximately 18 times the production of the other. The cost per pound of cotton in the case of the first grower was exactly 71.3 cents, in the case of the second grower 7.8 cents. The first planter's losses were so heavy that they make the comparative price of cotton of little or no importance to him. The second grower is in the fortunate position of reaping handsome profits even at rock botton prices for cotton.

The present cotton situation is in a large measure due to failure of farmers to follow the sound teachings of their state agricultural authorities.

That such a condition exists among the cotton farmers is deeply to be regretted, but it is perfectly clear that they have brought it on themselves.

Government or State legislation to reduce acreage is not practicable and only another form of paternalism that substitutes artificial aid for individual effort and efficiency.

Price standardization is good when in keeping with the laws

of supply and demand and is a result of a careful study of cost of productions and marketing by cooperative enterprises, but never is it advisable for Government or State authorities to interfere.

Retiring of a third or more of the cotton from the market no doubt would maintain the price level, but still there would be a surplus to carry over, and there is no guarantee that farmers will reduce their acreage another year.

Good business methods invariably result in elimination of those unable to produce economically. Farming is a basic industry, therefore, it seems that even here the real solution may be one of two things or both—(a) elimination of the inefficient grower, and (b) acreage reduction by crop diversification to balance supply to demand.

The key to the solution of the present emergency is held jointly by the local merchant and banker. If he will take a long time view of the situation, he will stand ready to loan money or advance supplies only to those farmers who definitely obligate themselves to an agreed acreage reduction, this to be determined by state and commercial cotton experts cooperating, and the efficient use of the acres eventually planted to cotton.

The key to the more efficient production of better cotton in the South rests with the planters themselves.

"I set it down as a fact that if all men knew what each said of the other there would not be four friends in the world."—Pascal.

BIG MEN

So ran the mathematical mind of Pascal in the middle of the seventeenth century. But what friends the four would be—the salt of the earth—men of Brodingnag—big men of the mental calibre so well described by Jeff in his essay "Chips".

As Jeff truly says "the big man invites criticism, asks questions, seeks advice. He is modest, quiet, plain as an old shoe." Little men want nothing of criticism, questions or advice. Well is it that we are reminded of these weaknesses for human nature improves but slowly. Look back a little.

Jeremy Bentham over a century ago described the fallacies of the small mind who opposed the reforms of the day. Jeremy's "Self trumpeters" are known to us all. When they get into office he wrote they "arrogate to themselves a degree of probity

which is to exclude all imputation and all inquiry." They also "think that their assertions are to be deemed equivalent to proof."

Again he said:

"If you expose any abuse, propose any reform, call for securities, inquiry, or measures to promote publicity, they set up a cry of surprise amounting almost to indignation, as if their integrity were questioned or their honor wounded".

Jeremy was right—Jeff is right. They are both worth reading. A hundred years is too short a time to make much difference to human nature in the mass.

But can individual little men become big men? Jeff is doubtful. We like to be more optimistic. We believe that with effort men can cultivate the virtues essential to growth, for the hope of bigness is all that most of us possess.

Eternal vigilance is the price of liberty.—John Philpot Curran, 1808.

RADICALS

EUGENE DEBS having completed the allotted three score and ten years passed out into the Unknown. It can never be determined how much longer he might have remained among us had he not been imprisoned for the indiscretion of free speech at a time when freedom itself had been suspended. He might have lived longer and advocated doctrines radical, unsound; he might even have repeated that war is a dirty business and should be resisted. To which we might or might not agree; but he would have lived as he always did speaking freely his mind to an attentive audience.

We can not say that we agree or hold sympathy with some of Mr. Debs' ideas. Back in the anxious summer of 1894, this writer took violent issue with the doctrine of Mr. Debs. As a corporal in the California state troops, he and his squad patrolled the railway bridges in the high Sierras against their being burned by Mr. Debs' lieutenants.

But though we may hold other beliefs than Mr. Debs' on what constitutes orderly relationship between men of different stations, on what restraints governments may or may not exercise in the regulations of such relationships, we must at the same time pay him tribute for his fearless advocacy of freedom of speech. As a consequence of his taking advantage of what he considered to be a right of life, to express his convictions freely

when even freedom of thought was denied, Mr. Debs suffered imprisonment and a probable shortening of his life.

Such leaders are necessary if we hope to continue free men. It is not at all necessary that they advocate the accepted order of thought. On the contrary there is ever need of the man who promises "I shall destroy this temple" with the added hope of its rebuilding. The lack of appreciation and reward bring too few such men to the front. For there are ever the High Priests of entrenched interests to bring them to trial for treason, and the led and unthinking mob to cry "Crucify him."

But the world, after the events, takes note of such men's utterances and keeps holy their martyrdom in the cause of freedom of speech.

We need today, in the midst of our feeling of security that our liberties are inviolable, such men as Debs to declare for free speech and to warn us of our dangers, even if the manner of its presentation offends us. For there are ever among us those who would deny us liberty of speech, except such speech as they might approve.

In the moment when Eugene Debs was preparing for his last emancipation, a meeting of timid persons in the City of New York was protesting against certain organizations in America as "the most radical organizations in the country," and that "they were always prating about democracy," and "always had thoughts of tearing down things that have been built up." Their denunciation was loudest against Free Speech.

It would interest these timid souls to know that Funk and Wagnall's definition of a "Radical" is "one holding the most advanced or progressive ideas" and that from the time of Christ our life and civilization has been continuously touched and advanced by such "Radicals" who advocated "tearing things down" for the building of better thoughts.

In the sense of the above definition the writer and his paper desire to be known as "Radical," and it is our earnest prayer that we may at all times be found in our humble way "tearing things down," and using the voice that God has given us in the cause of freedom of speech to the end that we may assist as far as our strength and talents permit in keeping the world and its people safe from any tyrant's form of democracy.

The Navy Runs a Dairy Farm

(*From page* 14)

the dairy show a reduction in number of sick days to approximately 3 per 100 men, and at present the average is less than 1 sick day a year per 100 men.

The marked reduction in sick days from gastro-intestinal diseases attracted wide attention in army circles, and foreign Governments sent representatives to the United States to study the Academy dairy. British army authorities particularly were interested on account of the prevalence of gastro-intestinal disorders among troops in India, the upshot of which was the establishment of a number of dairies in India on the general plan of the Academy farm.

Milk and water should not be mixed, say Department of Agriculture dairy experts, but no good dairy can get along without an abundant supply of pure water. To meet this need, two wells were drilled, capable of delivering each minute 82 gallons of excellent water which flows into a concrete reservoir having a capacity of 114,000 gallons. A fire pump connected with the water system gives protection against fire, although the buildings are as near fireproof as possible.

Plenty of running water makes it possible to scrub the barns and milk house daily. The cows are groomed, and just before milking time their udders, teats, and flanks are thoroughly washed with clean water. Then the attendants, clad in clean, white suits, attach the milking machines which draw the milk into sterilized pails. From the barn the milk is hurried to the milk house, where it is immediately chilled until nearly ice-cold, to prevent the growth of bacteria. It is then placed in clean pans and loaded on the trolley, which takes it to the big refrigerator at the Academy "mess hall."

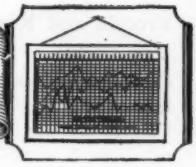
Special attention is paid to the milk pails, cans, milking machines, cooler, and everything that comes into contact with the milk. Every piece of apparatus is scrubbed with warm water and washing powder. Then it is rinsed and placed in the big steam sterilizer, where it is subjected to the action of live steam for half an hour.

An elaborate accounting system shows exactly the cost of production of milk per gallon, the cost of feeding both the fresh and dry animals, the cost of raising heifers until freshened, the profits made on all crops, and a depreciation charged off on all property including live stock in order to cover losses and deterioration.

The average payroll at the farm is $4,500 a month, the management being under the command of the Superintendent of the Naval Academy and in the direct charge of an officer of the Supply Corps. The civilian personnel of the dairy consists of a cattle superintendent, farm foreman, and approximately 56 other employes.

So much for the Navy's dairy farm—but no, let me introduce as a fitting climax, U.S.S.H. Howard Teehee Colantha, born February 3, 1922, one of the six purebred bulls on the farm. His registration number is 378167. Also, Meek Piebe Fobes 2nd, born November 27, 1916, who holds the farm record for milk production. She produced 23,860 pounds of milk with a butterfat content of 975.75 pounds of butter in a 365 day period. This is an average of 7.6 gallons a day. Her registration number is 352016.

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

Metchnikoff Was Wrong

Many years ago Metchnikoff, the Bulgarian zoologist, advanced the theory that milk soured by a rod-shaped germ, which he called bulgaricus, was especially healthful and was responsible for the long life of many people living in Bulgaria. He explained the action of this sour milk on the basis of the putrefactive products in the intestines.

It has since been found that this germ does not form permanent acid-forming colonies in the intestines which tend to reduce putrefactive action. Another organism, called acidophilus, does at tach itself permanently in the intestines, and according to certain enthusiasts, brings relief to dyspeptics, and longevity. A recent report from the University of Wisconsin says that this drink has been prepared by the bacteriology department of the College of Agriculture. These bacteriologists have found that great precaution must be taken to have the milk used free from all other bacteria, as they will spoil the product. The process is expensive, and where it is not readily available people have paid as high as $1.00 a quart for the acidophilus milk.

Well Fed Potatoes Pay

In Randolph county, W. Va., the county agent, J. B. Romine, put on a fertilizer demonstration by offering to buy the additional fertilizer for the farmer if he could have half of the increased yield of potatoes resulting. The county agent had contended that sulphate of ammonia and potash could be used in addition to acid phosphate. He bought $48.00 worth of the plant food, and applied 200 pounds of sulphate of ammonia and the same quantity of potash on each of the four acres, using in addition 400 pounds of acid phosphate to the acre. The land on which the potatoes got this good ration produced 70 bushels more per acre than where only the acid phosphate was used. Out of the increased yield of 280 bushels, the county agent got 140 at a cost of $43.00, or about 30 cents a bushel.

County Oil Co-Ops

The success of cooperation among farmers in the handling of many staple commodities has taught them that the same principle can be applied in many other directions. For instance, in Minnesota, many farmers are buying their oil and gasoline cooperatively, operating their own filling stations. One was recently started in Nobles county, and another new one has just begun business in Rock county, fostered by the County Farm Bureau. A study is being made of these cooperative oil filling stations by the State and Federal Governments. The first one of these stations was established in Minnesota about three years ago. Now there are nearly 50.

Protein and Rotation

In Kansas the Agricultural College has found that the crop rotation practiced has a very noticeable effect on the protein content of wheat. Since high protein wheat sells at a premium, this is a discovery of much importance. When a rotation of four years of alfalfa, one of corn, and two of wheat, alternating the corn and wheat as to the one or two-year period, is followed wheat was produced with an average protein content of 13.3 per cent. In another rotation which included brome grass instead of alfalfa, the wheat grown had a protein content of only 12.1 per cent. Where wheat was grown continuously on a piece of ground for the same period, it had the high average protein content of 14.2 per cent. This last result was explained by the fact that the land plowed early had plenty of time to accumulate nitrogen.

Fertilizer Converts

In a certain section of an Indiana county most of the farmers had little confidence in fertilizer. The county agent decided to convert them. He selected several analyses and induced a number of farmers to use the plant food. As a result he has concluded that the fields in the county no better than the unfertilized plots were really not worth harvesting He found that the 2-12-6 fertilizer gave the best results. Ten acres with 200 pounds to the acre grew 200 bushels of rye, and he credited 150 bushels to the fertilizer. In another county of the same state the county agent reported the case of a man on a rented farm, the owner of which was opposed to fertilizer. The renter put in 30 acres of wheat with fertilizer, but left a part of the field without. The unfed strip gave only a few bushels to the acre, while the whole field, including the strip, averaged 40 bushels. The county agent says the fertilizer gave the wheat just enough start last fall so that it did not winterkill, while the rest of the field was not strong enough to resist cold.

Dust to Dust

Great progress is being made in methods of getting rid of the rat, the most destructive animal in the world. Experts in the Biological Survey have tried out many ways of fooling this rodent or catching him unawares. Now they are having much success with cyanide dust. Recently a demonstration of this method was carried on in Johnson county, Kansas, in cooperation with the Farm Bureau. On one farm corncobs stored in a granary were pumped full of dust. When the cobs were shoveled over 46 dead rats were found.

Most of us have heard of waltzing mice, but not many know of "gopher dances." They are not performed by the gophers, but for the gophers. Near Arlee, Montana, they have taken to holding dances as a means of raising money for buying poisoned grain to kill the ground squirrels on the vacant lands that would not otherwise be cleared of the pests. They say the toe-work plan works well for all but the gophers, and they are turning up their toes.

More Milk Than Ever

Milk consumption in the United States last year was the greatest in the history of the country. The quantity consumed in fluid form, including cream, was 54,326,000,000 pounds, an increase of more than a billion and a half pounds over the preceding year. Per capita consumption is estimated at 1.2 pints a day.

Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy—both of facts and their interpretation.

International Institute of Agriculture Grows in Importance

THE executive committee of the American Committee of One Hundred of the International Institute of Agriculture at Rome met at the department in Washington on October 9 to receive the reports of the United States delegates at the last session of the institute at Rome, to elect officers, and to fill vacancies on the executive committee.

The American Committee of One Hundred is an unofficial body, composed of 100 members, formed as the result of a conference called some years ago by Secretary Wallace for the purpose of extending the knowledge concerning the work of the institute, and endeavoring, by friendly cooperation, to "harmonize the authority of governments with the free energies of the farmers." The desire of the committee is to bring about a closer understanding between the institute and governmental agencies and farmers under the treaty entered into as a result of an international conference held in 1905, at which the United States was represented by Dr. A. F. Woods, the present director of scientific work of the department, and by Henry White, the ambassador to Italy, and, upon their recommendation, Mr. Hill, master of the Pennsylvania State Grange, was also admitted as a delegate.

The executive committee of the Committee of One Hundred now consists of J. Butler Wright, Third Assistant Secretary of State, advisory member for the Department of State; Dr. Louis G. Michael, foreign agricultural economist; Doctor Woods, advisory member for the Department of Agriculture; Asher Hobson, United States delegate to the institute, advisory member for the institute; W. Dubois Brookings, manager of the natural-resources production department of the United States Chamber of Commerce; Charles W. Holman, secretary of the National Cooperative Milk Producers' Federation; Edwin G. Nourse, chief of the agricultural division of the Institute of Economics; Dr. R. A. Pearson, president of the University of Maryland; S. H. Thompson, president of the American Farm Bureau Federation; and L. J. Taber, master of the National Grange.

The chairman of the Committee of One Hundred is Dr. Arthur W. Gilbert, secretary of the National Association of Commissioners of

Agriculture; honorary chairman, Henry White; secretary, Mrs. Charlotte Barrell Ware, United States delegate to the general assembly in Rome in 1922 and 1924; treasurer, Harvey J. Sconce, director of Armour & Co., and United States delegate to the general assembly in 1920.

The institute is becoming more and more useful to the agriculture of the world, says Doctor Woods. Among its principal objects are the improvement and standardization of international statistical methods, so that the statistics of one country will mean the same thing in all others, especially with reference to crop production and consumption; the distribution of information regarding cooperation in all fields of agriculture; and control of animal and plant diseases.

Practically all the leading countries of the world are members of the institute, and their governments support it in accordance with treaty agreement. The idea of an international institute of agriculture originated with the late David Lubin, a citizen of California; and the beautiful building which the institute occupies as headquarters in Rome wac donated by the King of Italy.

* * *

Man-Made Climate for Walnuts

(*From page* 11)

five feet from the ground to a height equivalent to that of the top of the tree are placed thermographs and minimum thermometers. The thermographs, operated by clock work to run 29 hours, record all the variations of temperature and the exact time of these changes. The Weather Bureau provides the experts necessary to maintain these temperature stations.

In the two years that experiments have been made in heating walnut orchards the heaters used have been, almost without exception, those used earlier in the season by the citrus growers. This is entirely feasible as the danger to the orange and lemon crops is practically over by the first of March whereas the period of danger to the walnut bloom is in the months of March and April.

From a key station in the walnut district the federal expert by telephone notifies the growers of dangerous weather conditions, in the same manner that the citrus raisers are informed during the winter months.

Walnut heating is much less expensive and arduous than citrus heating, as it is necessary to light the oil-burning heaters for but a few hours in the early morning.

Last Spring at the Anderson Ranch, which is the largest walnut acreage in the state of California and which comprises 1,000 acres at Linden in the central part of the state, 25 acres were heated and the temperature raised from 25 degrees to 30½ degrees. The temperature conditions on this particular tract were nearly identical with those of the year previous when the crop was a total loss. Owing to the experiment of last year 40 additional acres are this year being equipped with heaters.

There is every reason to believe that the walnut grower can successfully combat frost damage through the forecasts of low temperatures and by the proper use of the orchard heaters.

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

An interesting indication of the Mid-West's awakening to the growing necessity of using more commercial fertilizer is found in bulletin No. 301, "Commercial Fertilizers," issued by the Agricultural Experiment Station of Purdue University, Lafayette, Indiana. The material, gathered together under the direction of O. S. Roberts, Acting State Chemist, sets forth in detail the inspection of commercial fertilizer in Indiana for the year 1925 and the individual record and standing of every manufacturer who sold fertilizer in the state in 1925. There were 128,000 tons of high grade mixed fertilizer and 18,000 tons of low and medium grade mixed sold in the state during the year, the most popular analysis being 2-12-6.

A significant point for the use of higher analysis is found in a table showing that the average plant food in tons has increased. These tonnages represented in mixed fertilizer analysis show an increase from a .75 nitrogen-10.84 phosphoric acid-1.60 potash in 1920 to a 1.40 nitrogen-13.79 phosphoric acid-5.71 potash in 1925. In line with the use of higher analysis another table in the bulletin shows that the cost per pound of plant food decreased from 11.4 cents in 1920 to 7.9 cents in 1925.

Other new fertilizer bulletins include:

Fertilizer Report—Seed Report, State Board of Agriculture, Dover, Delaware, Vol. 15, No. 4, H. H. Hanson, State Chemist.

Commercial Fertilizers, Official Inspections No. 117, Maine Agricultural Experiment Station, October, 1925, James M. Bartlett.

1926 *Spring Report of State Department of Agriculture, Michigan Fertilizer Bulletin No. 45, L. Whitney Watkins, Commissioner.*

Effects of Liming and Green Manuring on Crop Yields and on Soil Supplies of Nitrogen and Humus, Agricultural Experiment Station, University of Tennessee, Knoxville, Bulletin No. 135, May, 1926. C. A. Mooers.

Crops

Many bulletins on crops were received during the month. Among these is "Vegetable Crops of Florida," bulletin 44, by A. P. Spencer, University of Florida, Division of Extension, presenting in an attractive arrangement of information and pictures, the best proven methods of growing the vegetables of the Everglade state. This bulletin should prove of value to a wide circle of farmers who wish to know more about the crops they are already growing or the crops they contemplate adding in their program of diversification.

New Hampshire illustrates a leaflet, "Why We Need Alfalfa in New Hampshire," Extension circular No. 60, with a map showing a cow in New Hampshire with her neck stretched to eat out of a sack of grain in Iowa. The illustration tells the story, but G. L. Waugh, author of the leaflet, goes on to tell how alfalfa would reduce the New England feed bill, as well as many of the other advantages of the crop.

Cooperative Cotton Variety Tests, Agricultural Experiment Station, University of Arkansas, Fayetteville, Arkansas, Bulletin No. 210, July, 1926, Martin Nelson and J. O. Ware.

Corn Production Experiments in Delaware, Agricultural Experiment Station, University of Delaware, Newark, Delaware, Bulletin No. 146, July, 1926, George L. Schuster.

Seed Corn Curing and Storing, Agricultural Experiment Station, Michigan State College, East Lansing, Michigan, Circular Bulletin No. 96, August, 1926, D. F. Rainey and F. E. Fogle.

The Peach Orchard from Cleared Land to Bearing Trees, Agricultural Experiment Station, A. & M. College, Mississippi, Circular 66, May, 1926, W. S. Anderson.

Soybeans for Dairy Cows, Agricultural Experiment Station, A. &M. College, Mississippi, Bulletin No. 235, June, 1926, J. S. Moore and W. C. Cowsert.

The Pruning of Young and Bearing Peach Trees in the Orchard, New Jersey State College of Agriculture, Extension Bulletin No. 57, June, 1926, New Brunswick, N. J., M. A. Blake.

Crop Talk, Storing Farm Seeds, Ohio State University, Bulletin No. 88, September, 1926, M. T. Meyers.

The Ripening, Storage and Handling of Apples, U. S. D. A., Washington, D. C., Department Bulletin No. 1406, August, 1926.

Some Panicle Characters of Sorgo, U. S. D. A., Washington, D. C. Department Bulletin No. 1386, July, 1926, Horace B. Cowgill.

Relation of Kernel Texture to the Physical Characteristics, Milling and Baking Qualities, and Chemical Composition of Wheat, U. S. D. A., Washington, D. C., Department Bulletin No. 1420, August, 1926, J. H. Shollenberger and D. A. Coleman.

Comparative Shrinkage in Weight of Alfalfa Cured with Leaves Attached and Removed, U. S. D. A., Washington, D. C., Department Bulletin No. 1424, H. L. Westover.

Economics

"The Bumper Corn Crop Surplus," Current Economics Series Report No. 4 by G. S. Shepherd, Research Assistant of the Iowa Agricultural Experiment Station, discusses the surplus, the expenses of storage, profits and losses from storage, and when it is profitable to store. While this bulletin is of a technical nature, there is much information contained in it that should prove of great profit to the cornbelt farmer.

Farm Economics, Mid-Month Cotton Report, Alabama Polytechnic Institute, State Board of Agriculture and U. S. Department of Agriculture, Auburn, Alabama, Vol. 1, No. 19. F. W. Gist, J. D. Pope.

Missouri Farm Prices and Purchasing Power, Agricultural Experiment Station, University of Missouri, Research Bulletin 84, February, 1926. Donald R. G. Cowan.

Price Economics of What Farmers Sell, Agricultural Experiment Station, Clemson College, South Carolina, Bulletin No. 226, May, 1926, Ward C. Jensen.

Appendix of Tables to the Commercial Fresh Peach Industry in the United States, Part II, U. S. D. A., Washington, D. C., August, 1926.

Insects

The Tree Crickets of Oregon, Experiment Station, Oregon Agricultural College, Corvallis, Oregon, Station Bulletin No. 223, June, 1926, B. B. Fulton.

Diseases

H. R. Rosen, Associate Plant Pathologist of the Arkansas Agricultural Experiment Station, presents the findings of his recent investigations in "Bacterial Stalk Rot of Corn," bulletin No. 209. This disease has been noted in Arkansas for six years and is considered to be serious during those periods of the corn-growing season when the temperature, rainfall, and humidity are above normal.

Other bulletins received are:

Pecan Scab, Agricultural Experiment Station, University of Florida, Gainesville, Florida, Bulletin No. 181, May, 1926, R. E. Nolen.

Stem Injury of Tobacco Caused by Fungi Growing on the Poison Mixture Used for Controlling Budworms, Agricultural Experiment Station, University of Florida, Gainesville, Florida, Bulletin No. 182, May, 1926, W. B. Tisdale and J. G. Kelley.

Bunt (Stinking Smut) of Wheat Cuts Profits, Bureau of Plant Industry, U. S. D. A., Washington, D. C., Miscellaneous Circular No. 76, August, 1926.

Resistance in Sugar Beets to Curly Top, U. S. D. A., Washington, D. C. Department Circular 388, July, 1926, Eubanks Carsner.

American Potato Journal, Vol. III, No. 9, September, 1926, The Potato Association of America, Washington, D. C.

* * *

Being a man of balance doesn't mean that you must always straddle a fence.

Kentucky Blue Grass

(*From page 21*)

Table 1. Gain in Organic Matter and Nitrogen on DeKalb Soil from 1916 to 1924. Pounds per Acre (Limed soils).

Soil Treatment	Pasture			Rotation		
	P	PK	PKN	P	PK	PKN
Organic matter	8,972	20,329	13,458	9,254	9,675	13,040
Per cent increase	21.5	48.5	28.1	16.2	17.1	21.8
Nitrogen	330	910	630	430	490	410
Per cent increase	17.1	50.5	32.3	18.6	21.3	17.1
Total nitrogen fixation[1]	466	1,082	643[2]	614	726	440[2]

[1] Including that removed in crops. [2] Corrected for applied nitrogen.

A study of the data in table 1 shows that the DeKalb soil though depleted of its fertility quickly responded to lime and mineral fertilizer treatment. Both systems show considerable gain in nitrogen and organic matter. It is of interest to note the more rapid gain in fertility under the blue grass sod, especially where potash and nitrogen were used in addition to phosphorus. Addition of muriate of potash to the phosphorus treatment over doubled the gain in nitrogen and organic matter. There was also a gain of 716 pounds of total nitrogen fixed as the result of adding potash to the acid phosphate treatment.

The rapid accumulation of organic matter and nitrogen and Kentucky blue grass is of vital importance to those confronted with the problem of rebuilding a depleted soil, and emphasizes the importance of establishing highly developed blue grass pastures on land capable of good tillage in order that the accumulated fertility may, if necessary, be utilized for the growth of other crops.

The achievements at Snow Shoe through the systematic use of lime and mineral fertilizer may no doubt be duplicated by a good system of practical farming leading to the rapid restoration of this great area of depleted DeKalb soil and resulting in an increased agricultural wealth of the rural population of the Keystone State.

In connection with the above statement the writer wishes to quote the brilliant words of Samuel W. Johnson given in the introduction of his book on "How Plants Grow": "Science employs, in effecting its progress, essentially the same methods that are used by merely practical men. Its success is commonly more rapid and brilliant, because its instruments of observation are finer and more skillfully handled; because it experiments more industriously and variedly, thus commanding a wider and more fruitful experience, because it usually brings a more cultivated imagination and a more disciplined judgment to bear upon its work. . . . It is then for the interest of the farmer to avail himself of the labors of the man of science, when the latter is willing to inform himself in the details of practice, so as rightly to comprehend the questions which press for a solution."

The old fertilizer plots located at the College were originally laid out in 1868 leaving a two-foot blue grass strip between each plot. From 1868 to 1881 the plots were devoted to miscellaneous field experiments. From 1881 to the present time a definite plan of manurial treatments have been carried out.

We therefore have an opportunity to study soils in a cultivated

system as compared to permanent blue grass for a period of over half a century, In 1922 a number of plots of tier 1 were sampled and at the same time samples of soil were taken from the permanent Kentucky blue grass division strips dividing the plots sampled.

On each sample organic carbon, nitrogen, and alkali soluble ("active") humus were determined. We therefore have definite data on the comparative effects of permanent sod and cultivated crops on the accumulation of fertility. Since these are the oldest plots in America the results are especially valuable and worthy of presentation here. Space will not permit a detailed report of the results secured. We will confine our data to comparisons of four plot treatments; viz., P, PK, NPK, and LIME and 6 tons manure.

Table 2. Accumulation of soil fertility in a rotation system compared with permanent blue grass sod. 1868-1922.

	Pounds per Acre, Seven Inches					
	Plot soils			Unfertilized Grass land		
Plot Treatment	Organic Matter	Total Nitrogen	Active Humus	Organic Matter	Total Nitrogen	Active Humus
P	49,982	2,284	17,800	65,791	3,054	23,940
PK	61,971	2,964	26,000	78,518	3,740	30,140
PKN	59,630	2,880	25,400	79,390	3,830	32,240
Lime and Manure	78,480	3,690	25,700	90,745	4,290	30,540
Average	62,500	2,954	23,750	78,611	3,728	29,215
Average gain on grass soil				16,111	774	5,465

The data shown in table 2 confirms the Snow Shoe results and shows even in a more convincing matter, the great value of permanent grass as a means of soil rejuvenation. Even where 6 tons manure were used biennially on the plot soil the unfertilized grass land shows a greater accumulation of organic matter and nitrogen.

General Summary of Preceding Articles

1. Limited pasture acreage found on the tillable land, which at one time supported an excellent blue grass turf, has been neglected until at the present time the economic grasses have either been replaced by weeds or support a growth of grass of little economic value.

2. Prior to the present studies little attention had been paid to the development of highly productive Kentucky blue grass pastures on land equally as good as that now utilized for cultivated crops.

3. The data presented in the preceding pages show that highly productive blue grass pastures are worthy of a more prominent place in the economic scheme of farm management.

4. Although eastern climate is well adapted to the growth of Kentucky blue grass, the soils are too deficient in vital mineral plant food and must be well fertilized to pave the way for its best development.

5. Soluble nitrogen hastens the spring development of blue grass, shortens the resting period during the hot summer months, and prolongs the late fall growth.

6. The yields on the CaPK treated plots are limited by the rate of nitrification (presence of soluble nitrates) and not by the total amount of nitrogen present. Soluble nitrogen should, therefore, be applied annually.

7. The average computed acre value of the pasture resulting from the several treatments is as follows: CaP $25.20, CaPK $32.31, and CaPKN $40.92.

8. Over three times as much crude digestible protein was produced with complete fertilizer on pasture as produced on the same acreage in grain rotation (average of three soils).

9. Labor economy of pasture feeding is emphasized by the fact that to produce one ton of digestible crude protein in grain rotation involves a labor cost of approximately $178.00 as compared to $2.82 on pasture.

10. On DeKalb soil at Snow Shoe, at the end of eight years of cropping, the surface soil under Kentucky blue grass increased in organic matter 27.5 per cent as compared to 16.7 per cent with the same treatment in grain rotation.

11. On the plots treated with CaPK the pasture soil increased 48.5 per cent (20,329 pounds) in organic matter as compared to 17.1 per cent (9,675 pounds) in the rotation soil.

12. Every stockman should realize the important fact that direct sunshine is of vital importance to the welfare of his animals. Science has proved that direct sunlight greatly stimulates mineral metabolism, (80 pounds of fresh Kentucky blue grass contains 32 grams of calcium and 25 grams of phosphorus). Dairy cows in open pasture are more resistant to disease and their milk has a higher vitamin content than that of cows kept under shelter.

* * *

Dictating Prices

(*From page 27*)

proceeded to store in 1922-1923, and had to put a price on the stored tobacco so as to permit the cooperative associations to make advances to their members. Immediately that price became the basic price for the crop. Outsiders rushed to take advantage of it, leaving the cooperative organization holding not only its own members' share of the carry-over but also an amount representing tobacco that in the ordinary course would have been held by non-cooperators.

It was not able to get rid of this stored tobacco, except at a heavy loss. In October, 1925, the association was forced by its members to let them sell their tobacco in the open market. Millions of pounds of tobacco were then released, and the bottom dropped out of tobacco prices. Thousands of tobacco growers were threatened with the loss of their farms and homes. Serious trouble of a similar nature have also been suffered by the Tobacco Cooperative Association, Inc., at Hopkinsville, Ky., and the Miami Valley Tobacco Growers' Cooperative Association at Dayton, Ohio. A report by the Federal Trade Commission attributes some of the misfortune of the Kentucky, Tennessee, and Indiana association to mismanagement. It has been charged likewise that the management of the other associations has not been above criticism. But the principal trouble has obviously been too much faith in organization

(*Turn to page 59*)

Railroad Help

(From page 23)

Alabama Experiment Station worked out a plan of soil building by the use of vetch fertilized with acid phosphate. When tried out by farmers in Alabama, phenomenal increases of crops were secured. To popularize such a scheme, a plan of starting soil improving demonstrations was worked out and the Central of Georgia started soil improvement tests, offering to share the cost of such work with one farmer in each county. These are in progress now and are known as soil redintegration tests, the big word being used evidently to impress the public. Like former demonstrations it is expected that complete records will be kept and published for the research and practical value they may have. A lot of information is needed about vetch for the farmers are booming it in both Georgia and Alabama. In the last three years the amount sown annually in Georgia has jumped from a few thousand pounds to considerably more than a million in the Fall of 1925. It is about the same in Alabama.

A railroad agricultural agent showing an experiment on pasture rejuvenation to a group of Alabama farmers

When some other worth while thing is discovered, and it doesn't start off popular in an extension way, we'll call on the Central of Georgia Railway for help. We'll call on others too, for they have worked out similar means of assisting the development of farming along their lines. The Georgia Railroad is carrying on both pasture building and soil improvement; the A. B. & A. Ry. pasture building, tobacco culture, and truck growing; the S. A. L. Ry. poultry production, pasture building, and forestry development; the G. & F. Ry. tobacco growing,—all working in harmony with the extension organization from the college. Other railroads are not actively promoting demonstrations but are giving their support to the work being done by the college.

The cooperation of the Railroad Agriculturists and the State College of Agriculture in Georgia has been mutually advantageous. The projects undertaken have been, in the majority of cases, approved by the college, but have been made distinctive enough to stand as a separate effort. With projects distinctly their own the railroad workers can get recognition for their services and increase the good will of the farmers in the section served by their lines. The extension workers of the college have been getting assistance in expanding their work and have been getting credit for promoting such work. In every way it is a fine thing.

* * *

The woman of the species is more costly than the male.

South Dakota

(*From page* 28)

Directing the work of the entire institution as president of the college is Charles W. Pugsley, well-known agriculturist and former assistant secretary of agriculture at Washington, D. C. Since coming to South Dakota he has played no small part in shaping a sane and balanced agricultural program for the state. C. Larsen, as dean of agriculture, has charge of all agricultural work in the college, including the teaching, experimental work, and extension. The station staff at the present time has 43 specialists at Brookings, which does not include sub-station workers or day laborers, and the agricultural extension force has 72 workers, including county agents.

SOON after the experimental work was started in connection with State College, it became evident that natural conditions varied in different parts of the state and that the establishment of sub-experiment stations in representative sections was advisable. The first sub-station work was begun in central South Dakota at Highmore, Hyde county, in 1899. The Highmore sub-station has 140 acres of land. With 640 acres for experimental work in agronomy, the Cottonwood station in Jackson county is the largest in South Dakota. It is located in the central-west part of the state. The Vivian station, in Lyman county, representing southwest South Dakota, has 180 acres, and the Eureka station in McPherson county, representative of northwest South Dakota conditions, has 260 acres for agronomy experiments.

In addition to the agronomy sub-stations, there are large horticultural gardens located at Sioux Falls, Minnehaha county; Aberdeen, Brown county; Watertown, Codington county; Pierre, Hughes county; Philip, Haakon county; and Eureka, McPherson county.

Each of the agronomy sub-stations has livestock, equipment, and improvements, in addition to land. The agronomy tenth-acre experimental plots number about 2,000. The chemical and bacteriological research laboratories are maintained only at the main station at State College.

The most important service of the agricultural experiment station in South Dakota has been the improving of the cropping systems of the state. A good example of this is seen at Eureka. Wheat raising was the one business in that section in the early days, but the yields in this one-crop system soon fell. The sub-station advocated a cultivated crop, such as corn, for rotation with wheat. This corn-wheat rotation was gradually adopted by most of the farmers. The station is now endeavoring to get a legume crop like sweet clover added to the rotation; the legume to re-establish the fertility of the soil and the cultivated crop to keep down weeds.

THE sub-stations also select and adapt many crops to the locality in which they are located and in this way better the cropping system. Highmore selected Acme wheat, which is especially good for dry years and is a real contribution to the wheat-growing West. The station at Eureka is at work developing a new strain of corn which will be more suitable for the dry, northern climate of the state.

Many of the crops especially developed for South Dakota are of great value throughout the prairie northwest, and occasionally they even displace varieties in the eastern states. Hardigan alfalfa, a sturdy variety grown in Michigan, is an example of a forage crop developed in South Dakota and adopted in the East. It originated in South Dakota at the Highmore sub-station as Baltic alfalfa. Some of it was furnished to Colorado, where three selections were made of it. One of these went to Michigan, and selections made there resulted in Hardigan, a hardy variety for Michigan.

Hardigan alfalfa is just one illustration of a great many selections of cereals and forage crops made by the South Dakota experiment station which have caused the area of the United States once known as the Great American Desert to become one of the most productive sections of the entire country. The station rather boasts of its work with white-flowered sweet clover, once considered a noxious weed. It is said to be the first station to grow the legume, conduct a feeding experiment with it, and publish a bulletin on the results. The station obtained the seed from plants growing along the streets of Brookings, South Dakota. The hay was fed to lambs and the gains were equaled only by the lots that received alfalfa hay. The bulletin, "Roughage for Fattening Lambs," was published in April, 1913.

The station has conducted further tests with sweet clover to determine its value as a field crop for South Dakota and the extent that water is a limiting factor in its growth.

The distinction of being the first station in the Northwest to call attention to the advisability of seeding flax early in the spring is claimed by the State College Station. The date for South Dakota was found to be April 15. The losses are great each week that seeding is delayed, according to the results reported by the station. This finding surprised the administrators of many experiment stations, just as did the discovery that sweet clover, considered a weed, made excellent hay if cut at the right time.

NEXT in importance to improving the cropping systems of the state is the work done by the station in developing new corn varieties and other small grain crops. Corn and oats are two of the main crops grown in South Dakota. In 1904, 44 million bushels of corn were produced in South Dakota; in 1923, 145 million bushels. Corn was first grown only in one small corner of the state; now the corn-growing area of South Dakota is South Dakota. This increase in corn development, along with the extension of the corn-growing area, has been due largely to corn breeding and corn selections made in the agronomy department of the experimental station at South Dakota State College. Such strains of corn as South Dakota No. 86, Alta, and selections of Northwestern Dent, developed at the South Dakota experiment station and at different sub-stations, have been big factors in increasing the corn productivity of the state. Because corn is low in protein, the agronomy department is attempting to breed a strain of corn with a protein content of 15 per cent, an increase of 5 per cent over the average.

Further work in corn breeding is being done. Two systems of ear-to-row selection combined with hybridization are continuously

compared not only with each other but also with the use of mass-selected seed. Corn is also being bred for high and low ears. Another research problem with corn is that of attempting to discover the occurrence of corn ear rots in given areas and to determine the effect which ear rots may have upon the constituents of affected ears and upon the progeny from such ears.

The South Dakota experiment station has been especially successful in developing a high producing strain of oats, which is widely grown and is known as Sixty-Day oats. It has yielded an average increase of more than 11 bushels per acre at Brookings over that of other strains of oats; and at the Highmore sub-station, an increase of 4 bushels. A conservative estimate is that the oat yield of South Dakota has been increased at least 7½ million bushels annually from the same acreage, due to the use of this better yielding oat.

Another important production of the station is Fowlds' Hulless oat. It is the best hulless oat at the present time, according to Dr. A. N. Hume, the station agronomist. Even the best of the hulless oat varieties are susceptible to smut, but Fowlds' has proved to be twice as immune as ordinary strains of hulless oats. Fowlds' strain is the result of a cross between the Kilby hulless and Swedish Select. The new hulless oat has been received with great favor by feeders of such young animals as pigs, chickens, and calves.

Matthew Fowlds, the station plant breeder, is working on two new crosses which he believes will be still better than the original Fowlds' hulless. He is also attempting to get a smut-resisting hulless oat.

In the cereal breeding nurseries, located at Brookings, the main station, and at the sub-station at Highmore, some rather promising beardless, smooth beard, and hulless barleys are developing. The station hopes to have good results in time.

Rust-resistant wheat is also being developed through Marquis by Kota and other crosses. Emmer-wheat crosses are rust resistant, but the milling quality is doubtful. The agronomy department of the South Dakota experiment station is looking for worth while results in this work toward rust-resistant wheat.

The development of a strain of winter wheat which will survive the Dakota winters is another accomplishment in connection with the agronomy work in the experiment station. When experiments were first carried on, a very small percentage of the winter wheat would survive; now the results from Eureka, the most northerly sub-station, show that winter wheat is about as sure a crop as is the spring wheat.

Investigations with alfalfa should not be overlooked when considering the work of the South Dakota experiment station. South Dakota has gained almost a world-wide reputation for its hardy and productive alfalfa seed. Much of this is due to the alfalfa selection and breeding done by the station at State College. Several different varieties of alfalfa, such as South Dakota No. 12, Vale, and Baltic, have been bred for many years and have proved hardy and productive. The Cossack alfalfa imported from Siberia has also proved especially valuable and particularly adapted to the drier sections of the state. Alfalfa is now grown over the entire state. In 1909, the alfalfa acreage in South Dakota was 66,183; this year, it is 660,000. Considering

what has been found out about the necessary seed-inoculation and soil treatment, alfalfa can be raised practically in all agricultural sections of the United States. This means still greater demand for hardy South Dakota alfalfa seed produced especially in the western part of the state.

The South Dakota experiment station works from the ground up, developing new plants and improving cropping systems; it also works down, determining the best methods of maintaining soil fertility and making careful studies of the soil.

Soil fertility investigations are being continually carried on by the experiment station. The station has found that the addition of phosphorus to South Dakota soil increased the yield of cereals about 30 per cent. Another important test has been tried over a period of many years in regard to the livestock and grain systems of farming. The test has favored the grain system. The influence of crop rotations upon the maintenance of soil fertility, the availability of phosphorus in its different forms, and the effect of sulphur in combination with calcium, all of these phases of soil management are also being observed by the South Dakota experiment station.

A survey of South Dakota soils is in progress at the present time. The soil of seven counties has been studied, sampled, analyzed, and mapped. A detailed survey of six townships in three other counties has also been completed. The work will be continued until every county in the state has been surveyed. This soil survey furnishes an index as to the treatment a soil should receive to properly produce, and it serves as a guide to the kind of crops that can be grown with greatest success.

> Manure was once worth more as fuel than as fertilizer in some sections of South Dakota, according to soil fertility investigations carried on by the station. Early settlers in the Dakotas used to burn buffalo "chips" and cow "chips," the dried manure of these animals. This practice was not a foolish one, the station found; yet it declares that now manure should not be burned, for the soil is losing some of its virgin richness, and the application of manure is beginning to increase yields at Brookings and other points in the state.

The horticultural as well as the agronomy department has made notable contributions for successful agriculture in South Dakota. Professor N. E. Hansen, vice director and horticulturist of the experiment station, has brought many new plants to South Dakota from his agricultural explorations in Russia, Siberia, Europe, and Northern Canada. These imported plants and seeds have already served as a source for new plants for South Dakota and will furnish material for added work in the future.

The development of hardy early-bearing choice fruit, such as plums, cherries, apples, grapes, raspberries, and pears, has already been accomplished. Outstanding are the plums, born in the State College nursery. The fruit is

large, exceptionally well flavored and well adapted to home use. The raising of fruits of all kinds throughout South Dakota, because of the development of these hardy trees, will soon become just as common as is the raising of corn in all parts of the state.

The horticultural department in its research work has also bred and developed some fine ornamentals, such as roses and red flowered crab apples. The crab apples are low stocky plants. The department has a large variety of plants collected from all over the world to serve as a foundation for cross breeding work and special effort is being made to develop hardy fruits and hardy plants for the entire northwest.

In animal research, the South Dakota experiment station was one of the first to find that gains on cattle in the feed lot could be made most economically by the use of silage during the first half of the feeding period.

Other experiments being conducted by the department of animal husbandry include work in determining the feeding value of corn silage, yellow sweet clover hay, soybean hay, oilmeal, and other feeds in the production of baby beef and the value of soft corn for beef production; breeding to develop sheep with a valuable pelt for fur purposes by the use of Karakul and fat-rumped breeds and to test the cross-breeding of Holstein-Friesians and Jerseys; investigations regarding the summer feeding of market pigs, the tankage requirements of pigs fed barley on pasture, and winter rations for pigs.

> Another interesting animal husbandry experiment has been in progress at the State College station for nearly a dozen years. Several Siberian tailless fat-rumped sheep were imported a number of years ago. These sheep have been crossed and recrossed with improved native breeds to obtain a new breed without tails and at the same time possessing the desirable wool and mutton characteristics. This experiment is now so far along that the tailless characteristic is obtained and apparently is dominant and the wool and mutton characteristics are of high quality.

Much research is carried on in connection with plant diseases and plant pests, such as blight, grasshoppers, army worms, and chinch bugs, and with animal diseases, such as hog cholera, blackleg, anthrax, tuberculosis, white diarrhea in poultry, and others. Were the experiment station not finding the facts relating to the control of the plant and animal diseases and pests, the business of agriculture in South Dakota would be insecure.

The farm economics department of the experiment station at State College is now fully organized and is taking up the different problems in marketing the various farm commodities. To carry on much of this marketing research, the cooperation of other organizations outside of the experiment station proper is obtained. An example of this is the aid of the South Dakota Potato Growers' association and the Northwestern railroad in an investigation on po-

tato marketing.

An investigation of the quality of material in Women's coats is under way in the home economics department of the experiment station. This is said to be the only experiment of its kind in the United States.

The agricultural engineering department of the experiment station has undertaken a project pertaining to the use of electricity on the farm and in the home. Farmers near Renner, S. D., and a large power company are cooperating with State College. Extensive and intensive studies are being made of the cost, convenience, and degree of efficiency of the old methods as compared with the use of electricity. The project is growing in interest and extent. Plans for carrying out similar tests at Springfield, S. D., are now under consideration.

Some of the bulletins published during the past year by the experiment station at South Dakota State College are: "Weeds and Their Control," "Effects of Feeding Extremely Wide Rations to Horses," "Growing Flax in South Dakota," "Correlations Between Length of Spike and Culm in Wheat and Certain Characters of Progeny, Including Yield," "Soybeans for Dairy Cows," "Bacterial Flora of Normal Cows' Udders," "Improving Winter Rations for Pigs," "The Wheat-Stem Maggot," and "Soft Corn for Fattening Cattle."

The extension service of the college published about half a hundred bulletins and circulars during the past year. These are based on work conducted by the experiment station. One department of the station alone has enough material, according to its head, to publish several bulletins immediately.

Large industrial concerns spend millions of dollars on finding facts concerning their business, but every new fact is guarded and protected by patents. The new facts discovered by the different land-grant college experiment stations are free to everybody. Through bulletins, public meetings, the extension service, and through contact with hundreds of students each year, the facts are being broadcast for the benefit of all.

Specified Farming

(*From page* 18)

years when the ravages of the Colorado potato beetle were stopped by dusting only around the edges of the potato fields. The best time to dust the potato plants, according to Mr. Weaver, is in June when the eggs of the beetles are hatching. He does his dusting at night with a Johnson dusting machine. At this time the dew is on the potato vines and no water is needed for the application of the poison. Six rows are dusted at a time and a mixture of one part Paris Green to 10 parts hydrated lime has proven very effective in controlling the beetles.

Six acres a day can be harvested with one digging machine. Usually people in the vicinity of Bird City pick up the potatoes after the digging machines. They pick the potatoes clean and pay Mr. Weaver $1 a bushel for the potatoes they want to buy, taking them as they have been picked up. This practice has worked very satisfactorily for the past 13 years. Mr. Weaver has never found it necessary to ship his potatoes to market. People from surrounding towns and the vicinity of Bird City are always glad to come and buy his potatoes. Last fall people drove trucks as far as 125 miles to buy them.

Tung-Oil

(*From page* 10)

oil producing section of the South, particularly in Florida, and was deeply impressed with the possibilities of the industry in this section. He says that he sees no good reason why America should not only produce enough tung-oil for her own consumption, but should also be able to fill part of a growing European demand for this product.

Speaking before the American Paint and Varnish Associations at Cleveland, October 19, 1925, Mr. Arnold said:

"I am pleased to tell you that I was very agreeably surprised at the successful results of the American Tung-Oil Corporation's work in northern Florida. I found the trees already planted in a very healthful condition, and so far as I am aware, in better condition than similar aged trees in China. I am told by Mr. Henry A. Gardner, executive manager of the Corporation . . . That an acre is capable of growing on the average 116 trees. The best individual trees at the University of Florida's Experiment Station, which are eight years old, produce three gallons of oil per tree. Thus a very conservative estimate of the average production per tree at the time of maximum production should be one gallon of oil, which at present is estimated at a value of about $1.20. Allowing 15 per cent for the crushing of the nuts, one tree should possibly realize an average of $1.00. Thus one acre of eight-year-old trees should gross from $100 to $300 per acre. Undoubtedly trees four years old, if in good condition and producing well, should possibly net about $50 per acre. I am told that land in northern Florida produces less than $20 per acre when planted in corn or peanuts . . . It appears that the trees require comparatively little cultivation. It also appears that they are remarkably free from pests or parasites.

"While trees in northern Florida have done exceptionally well, it has been found that trees in lower Mississippi and lower Louisiana, around the Gulf section, have also done remarkably well because of the modifying influences of the temperature of the region near the Gulf, the soil conditions, etc. Furthermore, it is believed that trees grown in the extreme lower portion of Georgia would thrive. In view of the above, it is probable that further extension of the tung-oil industry should be in these sections because of the lower cost of land.

"THE wood-oil interests in China have been led to believe that

A 9-yr.-old Florida tung-oil tree

climatic and soil conditions in the United States are not favorable for the growing of these trees, and that American labor costs in handling the nuts are so high as to militate against the success of the industry. It has been demonstrated by work thus far carried out that the soil and climatic conditions in certain sections of the South are all that could be desired. As the nuts fall from the trees during the autumn and may remain on the ground several months before deteriorating, the labor costs in gathering the nuts are comparatively low and not a factor of serious consequences. It has already been demonstrated that through scientific methods on the part of American growers and producers in handling the nuts a superior grade of oil can be produced in this country commanding a higher market value than the oil as produced in China. Thus there appears to be no reason for apprehension as to the possible success of the industry in the United States.

"OUR importations from China now aggregate in value about $15,000,000 a year. They are on the increase, and it would seem that it may be expected that within another 10 years the quantity consumed by our paint and varnish manufacturers in this country may reach $20,000,000 or $25,000,000. Thus the prospects are at present bright for the development of a new industry in this country which may mean an added economic value of from $20,000,000 to $25,000,000 annually.

"What I saw of the industry as thus far developed here convinces me that . . ., in spite of lower economic conditions in China, the growing of tung-oil trees in America can be made a profitable venture. . . ."

It cannot yet be said with certainty that tung-oil trees will grow profitably in this section, but every evidence seems to indicate that they will.

* * *

Smash Potato Records

(*From page* 24)

containing approximately 23 per cent of phosphoric acid and 24 per cent of potash. This fertilizer was broadcast over the land prior to fitting it for planting. As to the amount of seed planted, Zuckerman brothers planted 20 sacks, approximately 40 bushels, per acre. This figure is in striking contrast with that of the estimated average amount used by potato growers of the United States of 8.6 bushels per acre. The Zuckermans spaced their rows close together, 28 inches apart, and the plants were 8 to 10 inches apart in the row. In this spacing some more than 25,000 seed pieces are required to plant an acre, instead of 14,520 when the rows are 3 feet apart and the seed pieces 1 foot apart in row.

"One of the questions which, it would seem, might be profitably asked in connection with this record-breaking crop is that of the practicability and the economic possibilities in the production of such large yields. There is little question but that more careful attention to the preparation of the soil, proper fertilization, and the liberal use of high-grade seed, would very materially increase acre yields," says Mr. Stuart.

Dictating Prices

(*From page* 49)

as a means of dictating prices.

Compare these disillusioning experiences with that of one or two farmers' cooperative associations that have not relied for their success on efforts to control prices. When the Citrus Fruit Growers' Association of California was first organized, the citrus fruit industry was in a depressed condition. Marketing agencies had not been able to find a market for the crop of 1892-23, although total shipments were only 5,936 cars. Cooperative marketing brought about a wider distribution of the crop and better returns to the growers. In 1922-23 a profitable outlet was found for a crop 10 times as large as the one that had been a glut in the market 20 years before. This was all done without any attempt at fixing prices. It was accomplished by reducing packing charges, by better control of insect and fungous pests, by pooled buying of supplies, by the establishment of precooling plants, and by the stimulating of demand through advertising.

Another example is that of the American Cranberry Exchange, a selling organization for cranberry growers located around Cape Cod, Mass., in New Jersey, and in Wisconsin. A. U. Chaney is its master-mind. Chaney goes on the principle that distribution is more important than price. He estimates the cranberry consuming capacity of different cities, and warns produce dealers when he thinks they are ordering too big a supply. In this way he saved Detroit dealers from a big loss last year.

Cooperative associations can stabilize prices by regulating the movement of commodities to market in accordance with the requirements of consumption. But going beyond that modest aim always causes trouble. Our farmers business organizations had more than 3,000,000 members last year. Mistakes in their price policies may therefore be very costly to agriculture.

It would pay farmers to study carefully the experience of other economic organizations that have

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attempted to control prices. They might ask themselves why there is less ill-feeling against the trusts than there used to be. One reason is that the trusts are not all powerful in the matter of prices, but are bound almost as much as competitive business by the law of supply and demand. Some trusts that control production seem to charge more for their goods than consumers would have to pay in a free market. But there is a warning to the farmers in that very fact. Price-control is inseparable from control of production. It gets you nowhere to boost prices temporarily, only to have the market finally swamped by a flood of new production.

* * *

For Peat's Sake Use Potash

(*From page 7*)

"For best results an application of fertilizers should be made deep enough to enable plant roots to reach the fertilizer in a moist soil but never plowed under.

"Broadcasting on plowed ground with a grain fertilizer is the best method of application but the fertilizer may be applied by hand and be disked in. Such broadcast applications are suitable for all cultivated crops, grain, emergency hay crops, small truck, and some special crops which are sown like grain. When applications are to be made for peas, soybeans, and some other crops, the fertilizers must not be allowed to go down the same spout as the seed, or germination will be impaired. For these crops, the application may be made with the drill just before planting, about an inch deeper than the seed is to be sown, or it is applied broadcast and disked in.

"Row or hill applications are desirable for crops which permit this method. Amounts to be applied vary with the nature of the fertilizer, the kind of crop, and the point of application. Too close or too heavy applications result in retarded or totally prevented germination.

"For corn in hills not over 150 pounds per acre should be applied; in drills 250 pounds may be used. Application is made with a fertilizer attachment to the corn planter. Potatoes can be fertilized in the row at amounts up to 500 pounds per acre, but the fertilizer must be beneath or beside the seed pieces."

The best practice on intertilled crops is the part broadcast—part hill or row method, according to the soil experts, when the amounts of fertilizer which should be used cannot safely be applied in the row or hill or when the following crop is not to be treated. In such cases, about one-third in the hill or row, and two-thirds broadcast is a good rule to follow. Nitrogen would be omitted from the fertilizer to be broadcast except on small truck. The following method is desirable for general crops, especially where manure is used. A part of the treatment to be applied during the rotation period would go on the cultivated crop in the row and the balance on grain, with manure applications where most convenient.

"Top dressing is used only on rye, alfalfa, and other hay crops. Up to 200 pounds of potash per acre may be applied. The simplest way is to broadcast by hand or with any suitable implement early in the spring or just after the first cutting. Only potash should be applied in this manner."

Chips

(*From page 4*)

be in his office at a conference with some others when a letter was handed in which when read aloud proved to be a criticism of some work done by the financier.

Examination proved that the criticism was not based on facts and one of the men at the conference waxed very indignant and wroth.

"I'd get that fellow in here if I were you, Chief, and give him a piece of my mind! The idea of him criticizing like that! Especially when the facts are not straight! I believe that fellow is just trying maliciously to make trouble," he exploded.

The great financier smiled quietly, laid the letter down, put the tips of his fingers gently together and said: "No, George; we'll not do that. Instead, we shall thank him courteously for his criticism, at the same time pointing out to him the facts as we have them. We'll be sure to invite him to further criticism whenever he sees fit. Of course, we shall gently caution him to verify his facts next time."

Then as he saw a look flash across the man's face—a look which clearly said: "Well, go ahead, handle it *your* way, but I'd get that chap in and trounce him," —he leaned forward and, including all of us as he turned from face to face, he explained slowly and quietly.

"You see, gentlemen, here's the way I look at it. This letter criticizes something I have done. It happens that it is not based on the facts. But should I get thin-skinned and rake the chap over the coals, in the future he will close up like a clam and be loath to give us the benefit of his further advice and criticism.

"Perhaps the facts he had—which, after all, are the only ones he could see, not having ours—were in his opinion sufficient justification for this letter. At any rate," he continued, "we cannot afford to close up any avenue through which criticism, right or wrong, destructive or constructive, can filter through to us. I do not think, in this case, that this man had any other thought than to be helpful; but even if he sought to make trouble it has been my conclusion that malicious trouble-making is like a boomerang—it swings back to fell the man who uses it.

"Any criticisms which come to us unfounded are just so much chaff—we can blow them aside unharmed. But when we place ourselves in a position where we refuse *all* criticism we weaken ourselves tremendously as we shut out all outside aid and thus no longer receive criticism that *is* founded on fact—and which would, accordingly, be helpful.

"We must be big—not thin-skinned, not always going around with chips on our shoulders. No, gentlemen, I'll write this fellow a nice letter of thanks," he concluded.

And there you have the broad-gauged attitude which always bespeaks the big man. He is immune to petty things. He smilingly ignores them. He is thick-skinned, broad, ample—and carries no chips on sensititive shoulders.

OVER-SENSITIVENESS is a form of paranoia—the disease of fear. The little man, always resentful and indignant—who is often in a huff—is a victim, doctors say, of a minor form of paranoia. Nine times out of ten the victim assumes an attitude which

plainly says, "I'm not going to let anyone walk over me!"

The little man with a chip on his shoulder must spend so much time balancing the chip that he has little chance to become a big man. The cloak of bold bluff he throws over his personality only hides a shivering, quaking, timid soul, fearful lest some one, some day, may actually have the temerity to knock his chip off.

Strong men need no chips—they are not thin-skinned, sensitive, fearful, resentful of their rights. They laughingly try to avoid combat unless it becomes vitally necessary. They know that in a real fight they can win, and so mock-fights engendered by super-sensitive challengers only amuse them.

Dempsey is rarely challenged—and never involves himself in the street brawls into which lesser men are so constantly falling.

Show me a chap with a chip on his shoulder and I'll show you a little fellow, with none of the attributes of a big man.

"THE WISE FARMER"

There was a man in our town
And he was wondrous wise;
He knew that if he wanted crops
He'd have to fertilize.

It's nitrogen that makes things green,
Said this man of active brain;
And potash makes the good strong straw,
And phosphate plumps the grain,
But it's clearly wrong to waste plant food
On a wet and soggy field;
I'll surely have to put in drains
If I'd increase the yield.

And after I have drained the land
I must plow it deep all over;
And even then I'll not succeed,
Unless it will grow clover.
Now acid soil will not produce
A clover sod that's prime;
So if I have sour soil,
I'll have to put on lime.

And after doing all these things,
To make success more sure,
I'll try my very best to keep
From wasting the manure.
So I'll drain, and lime, and cultivate,
With all that that implies;
And when I've done all that thoroughly
I'll manure and fertilize.

—Dean Alfred Vivian,
Ohio State University.

Mr. Farmer, Mr. Farmer,
How does your cotton grow?
If it isn't the weevil it's some other evil,
Or water between every row.

—JEANNETTE BLOUNT.

Farmer boy, farmer boy, where have you been?
I've been to the city some shekels to win.
Farmer boy, farmer boy, what saw you there?
Girls with knee skirts, red lips and bobbed hair.

—JEANNETTE BLOUNT.

If only myself could talk to myself,
As I knew him a year ago,
I could tell him a lot,
That would save him a lot,
Of the things he ought to know.

—*Kipling.*

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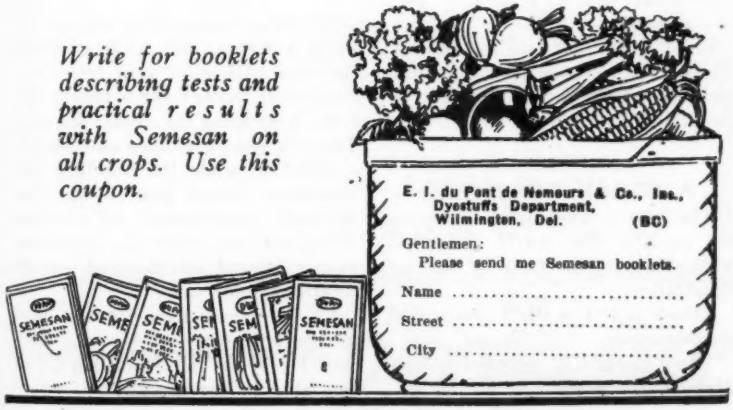

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WON'T PLAY IN HIS YARD

"Conductor!" shouted a passenger on the back-country train. That was my station, sir! Why don't you stop?"

"We don't stop there any longer," said the conductor. "The engineer is mad at the station agent."—*Presbyterian Advance.*

The owner of the store was trying to give the new boy a little fatherly advice.

"Why, young man, I even started out in life as a barefoot boy."

"Well, I wasn't born with shoes on myself, sir," replied the youngster.—*Good Hardware.*

INTERIOR DECORATION

Little Girl—"Package of pink dye, please."

Merchant—"For woolen or cotton goods?"

Child—"It's for ma's stomach. The doctor said she'd have to diet, and she wants a pretty color."—*Progressive Grocer.*

A CLOSE OBSERVER

The new schoolmarm, in trying to explain the world "slowly," walked across the floor by way of illustration.

"How did I walk?" she asked the class.

"Bow-Legged," shouted little Mabel.—*Exchange.*

COME RIGHT IN

"Can I see the Secretary of Agriculture?"

"Well, he is very busy, madam. What was it you wanted to see him about?"

"About a geranium of mine that isn't doing very well."—*Louisville Courier Journal.*

MAKES A BIG DIFFERENCE

Teacher—"Now, children, how old would a person be who was born in 1889?"

Pupils (in chorus)—"Man or woman?"—*Exchange.*

CAPITAL

Teacher—"Now tell us, Johnnie, which is the least-used bone in the human body?"

Johnnie (promptly)—"The head!"

A young woman with aspirations to be a singer, and, as is so often the case, little else, went to a German vocal teacher for a tryout before arranging to take lessons. The professor sat down and played a selection while the budding but ambitious singer poured out her choicest assortment of notes. When all was over the professor swung around on his stool and in wrathful voice said:

"Ach! Never have I heard such a voice! I blay on der vite keys und I blay on der black keys, but you sing in der cracks!"

Lifting time

—too late now to increase yields and sugar content; but time to plan for more profit next year—

Potash

No Potash

WHEN the harvesting is all over and your beets have been delivered to the factory—are you satisfied?

Are you well paid for your labor? Does your crop show a good profit per acre? or did your neighbor get better results?

Look your beets over carefully at lifting time. Are the roots sound, clean and well-shaped? Or are they forked, twisted and rough? Are there symptoms of root rot?

Potash—*available* potash—must be supplied to growing sugar beets. It helps prevent root rot, develops well-shaped beets, improves yields and—*most important*—increases the sugar content.

Note the ear marks of potash hunger in the starved beet shown here. Did *your* beets show any of these?

Now . . . . *now,* while you have the chance to look at actual beets that have suffered—make your decision to use plenty of potash in your fertilizer next spring.

On mineral soils, broadcast 250 to 500 pounds per acre of a high analysis mixture with 10% potash, or 400 to 800 pounds per acre if the mixture contains only 6% potash.

On muck and peaty sands, broadcast 400 to 800 pounds per acre of such high grade mixtures as 0-12-12, 0-8-24, or 0-8-32. Or 200 to 400 of 0-0-50.

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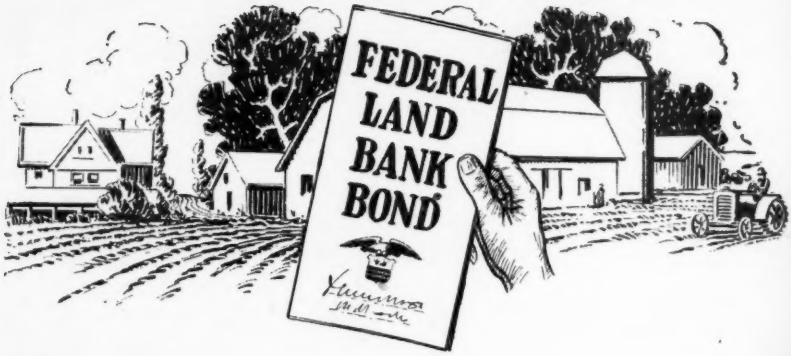
POTASH



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